Certification of Compliance

47 CFR Part 22(H)/ Part 24(E)

Test Report File No.	GSTL-EF13-002	■ Basic	□ Alternate
Date of Receipt	May 13, 2013	**Begin of test date**	May 14, 2013
Date of Issue	June 04, 2013	**End of test date**	June 03, 2013

Kind of Product	Dual Band SRU
Basic Model(s)	DBSRU-CP
FCCID	Z69D01T4JX2

Applicant	Intelibs, Inc.
Address	1500 Stony Brook Road #320, Stony Brook, NY 11794, USA
Manufacturer/Factory	Intelibs, Inc.
Address	1500 Stony Brook Road #320, Stony Brook, NY 11794, USA
Radiated RF Output Power	23 dBm for transmitting single band
Composite Power	26 dBm for transmitting dual band simultaneously
Classification	PCS Licensed Transmitter
Type Modulation	GSM(EDGE)/ CDMA/ WCDMA
Standard	FCC Part 22(H), 24(E), 2

Test Result ☒ **Positive** ☐ **Negative**

Tested By

U.H. Ryu

Reviewed By

S.J.OH

Comment(s)

-This test report consists of 75 pages with appendix.

-The test result only responds to the tested sample. This report shall not be reproduced except in full, without the allowance of the test laboratory.

-Information of GSTL test laboratory
635-3, Sugwang-ri, Sindun-myeon, Icheon-si, Gyeonggi-do, 467-843, Korea
Tel+82-31-634-1800/+82-1-634-2984
Fax+82-31-634-2985

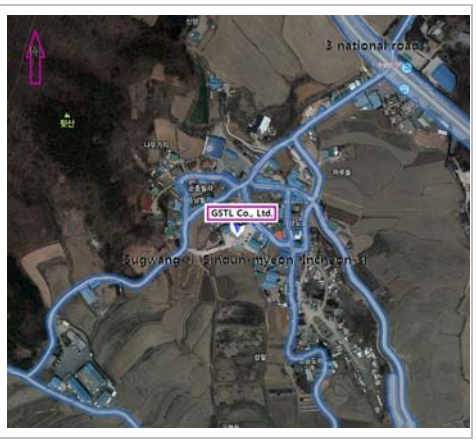


TABLE OF CONTENTS

1. General Information

1.1 Test Firm

Company name	:	GSTL Co., Ltd.
Address	:	635-3, Sugwang-ri, Shindun-myeon, Icheon-si Gyeonggi-do, Korea, 467-843
Web site	:	http://www.gstl.co.kr
E-mail	:	rf@gstl.co.kr
Telephone	:	+82-31-634-1800
Facsimile	:	+82-31-634- 2984

1.2 Accredited agencies

- KCC Registration No. : KR0146
- FCC MRA Registration No. : 273444

2. PRODUCT INFORMATION

2.1 Client & Manufacturer

Company name	:	Intelibs, Inc.
Address	:	1500 Stony Brook Road #320, Stony Brook, NY 11794, USA
Telephone	:	+1-917-209-5930

2.2 Equipment Under Test (EUT)

Classification	:	PCS Licensed Transmitter
Trade name	:	Intelibs
Model name	:	Dual Band SRU
Serial number	:	Identification
EUT condition	:	Pre-production, not damaged
Downlink	:	869~894MHz (GSM 850(EDGE))
	:	1930~1990MHz (GSM 1900(EDGE))
	:	869~894MHz (CDMA 850)
	:	1930~1990MHz (CDMA 1900)
	:	869~894MHz (WCDMA 850)
	:	1930~1990MHz (WCDMA 1900)
System gain	:	50 dBm max.
Frequency Tolerance	:	±0.01 ppm
Emission Designators	:	F9W
Power Input	:	12 Vdc

- Please refer to User's Manual.

2.3 The dc voltages applied to and dc currents

- SRU (Dual Band)

Module name		The current consumption of each module (mA)			
		12	Vdc	7	Vdc
1	Optical Module	200		100	
2	MCU Board	70			
3	Quadplexer Cavity Filter				
4	RF Transceiver			3500	
Supply current for each voltage (mA)		270		3600	

2.4 Tested Frequency

Mode	TX (MHz)
GSM 850 / EDGE_DL	869.20
	881.50
	893.80
CDMA 850_DL	869.70
	881.50
	893.31
WCDMA 850_DL	871.40
	881.50
	891.60
GSM 1900 / EDGE_DL	1930.20
	1960.00
	1989.80
CDMA 1900_DL	1931.20
	1960.00
	1988.90
WCDMA 1900_DL	1932.40
	1960.00
	1987.60

2.5 Mode of Operation

The EUT was powered by DC 12 V using external AC/DC Adaptor. The EUT was configured for system gain, 50dB. Repeater simulators were used to provide the input signals to the EUT. Tests were performed with GSM, CDMA and WCDMA modulations. The input power was the maximum declared by the manufacturer.

3. Summary

3.1 Summary of test

Parameter	Status
Transmitter Requirements	
RF Power Output	C
Occupied Bandwidth	C
Out-of-Band Emissions at antenna terminal	C
Inter-modulation Test	C
Transmitter Spurious Radiation	C
Frequency Stability	C

Note 1: C=Complies NC=Not Complies NT=Not Tested NA=Not Applicable

Note 2: The data in this test report are to be tested to the ANSI/TIA-603-C-2004 standard

3.2 Summary of test

3.2.1 RF Power Output

1) Test Procedure

The EUT RF output was connected to Power Meter. The EUT was setup to transmit continuously with maximum power. A spectrum analyzer was setup to measure peak power. Measurements were performed at three frequencies (low, middle, and high channels) with all modulations

2) Test Result

Modulation : GSM 850

	Freq. Tuned(MHz)	Power Input(dBm)	Power output(dBm)	Power Output(W)
Low	869.20	-10.00	22.53	0.18
Middle	881.50	-10.00	23.24	0.21
High	893.80	-10.00	22.21	0.17

Modulation : GSM 850 (EDGE)

	Freq. Tuned(MHz)	Power Input(dBm)	Power output(dBm)	Power Output(W)
Low	869.20	-10.00	22.35	0.17
Middle	881.50	-10.00	23.39	0.22
High	893.80	-10.00	22.50	0.18

Modulation : CDMA 850

	Freq. Tuned(MHz)	Power Input(dBm)	Power output(dBm)	Power Output(W)
Low	869.70	-10.00	23.25	0.21
Middle	881.50	-10.00	23.76	0.24
High	893.31	-10.00	23.06	0.20

Modulation : WCDMA 850

	Freq. Tuned(MHz)	Power Input(dBm)	Power output(dBm)	Power Output(W)
Low	871.40	-10.00	23.05	0.20
Middle	881.50	-10.00	23.36	0.22
High	891.60	-10.00	23.21	0.21

Modulation : GSM 1900

	Freq. Tuned(MHz)	Power Input(dBm)	Power output(dBm)	Power Output(W)
Low	1930.20	-10.00	23.17	0.21
Middle	1960.00	-10.00	23.46	0.22
High	1989.80	-10.00	22.76	0.19

Modulation : GSM 1900 (EDGE)

	Freq. Tuned(MHz)	Power Input(dBm)	Power output(dBm)	Power Output(W)
Low	1930.20	-10.00	22.83	0.19
Middle	1960.00	-10.00	23.36	0.22
High	1989.80	-10.00	22.78	0.19

Modulation : CDMA 1900

	Freq. Tuned(MHz)	Power Input(dBm)	Power output(dBm)	Power Output(W)
Low	1931.20	-10.00	23.26	0.21
Middle	1960.00	-10.00	23.09	0.20
High	1988.70	-10.00	22.82	0.19

Modulation : WCDMA 1900

	Freq. Tuned(MHz)	Power Input(dBm)	Power output(dBm)	Power Output(W)
Low	1932.00	-10.00	23.60	0.23
Middle	1960.00	-10.00	23.25	0.21
High	1988.00	-10.00	22.80	0.19

3.2.2 Occupied Bandwidth

1) Test Procedure

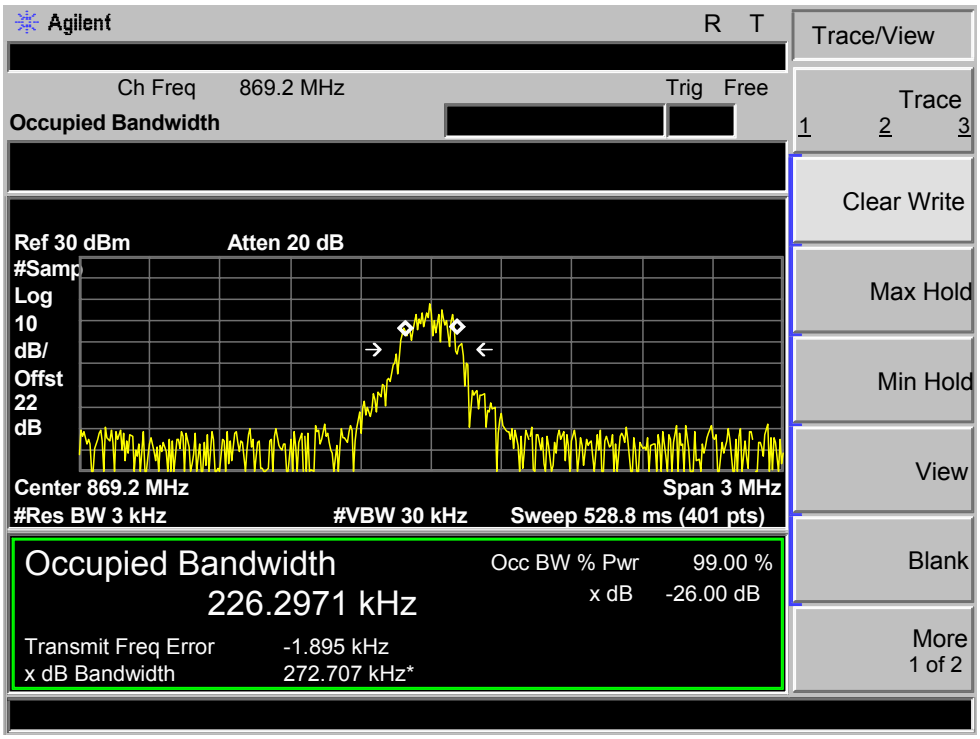
The EUT RF ports were connected to Spectrum analyzer. The EUT was setup to transmit maximum power. The spectrum analyzer was setup to measure the Occupied Bandwidth (defined as the 99% Power Bandwidth). The Occupied Bandwidth was measured at the output ports of the EUT at the first, middle and last channels for each type of modulation.

2) Test Result : complies

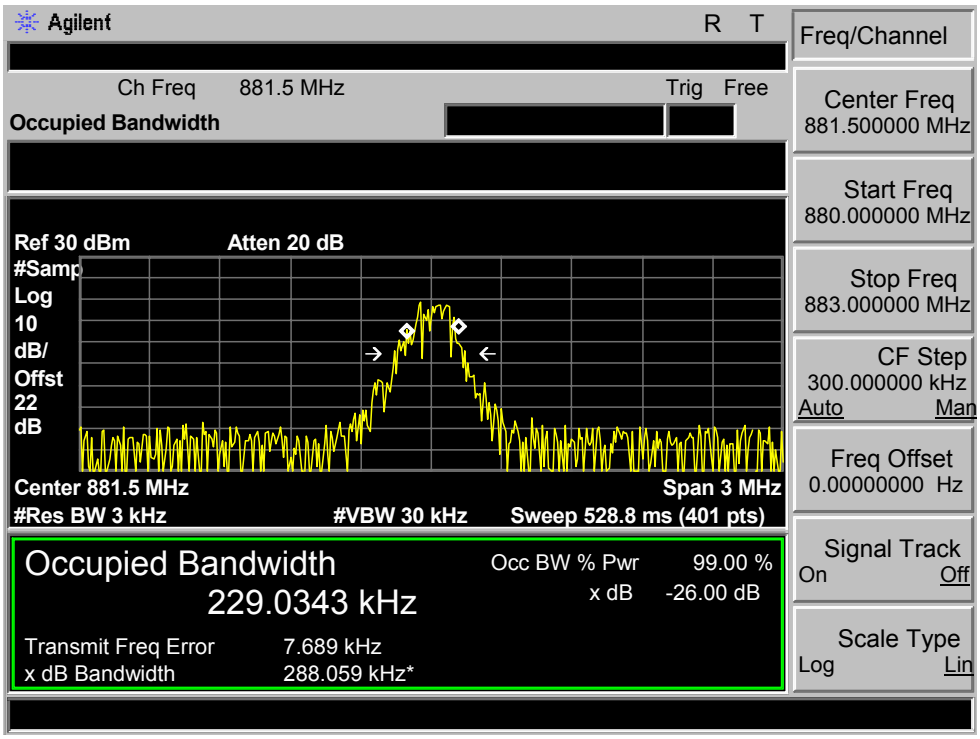
Refer to the following graphs**.**

Occupied Bandwidth at GSM 850

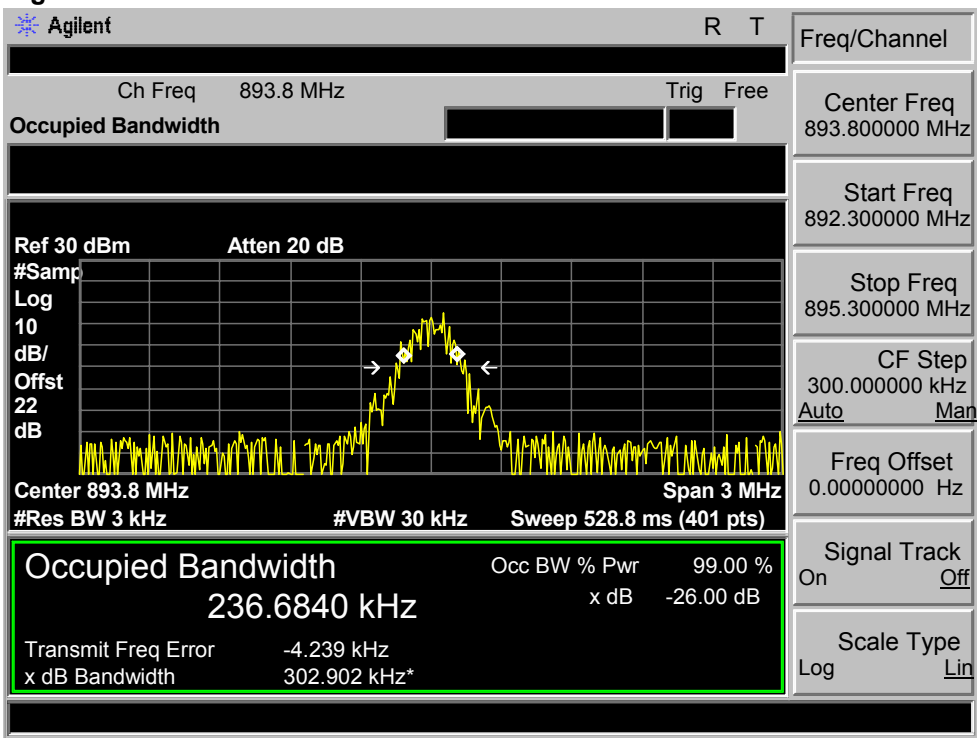
Low



Middle

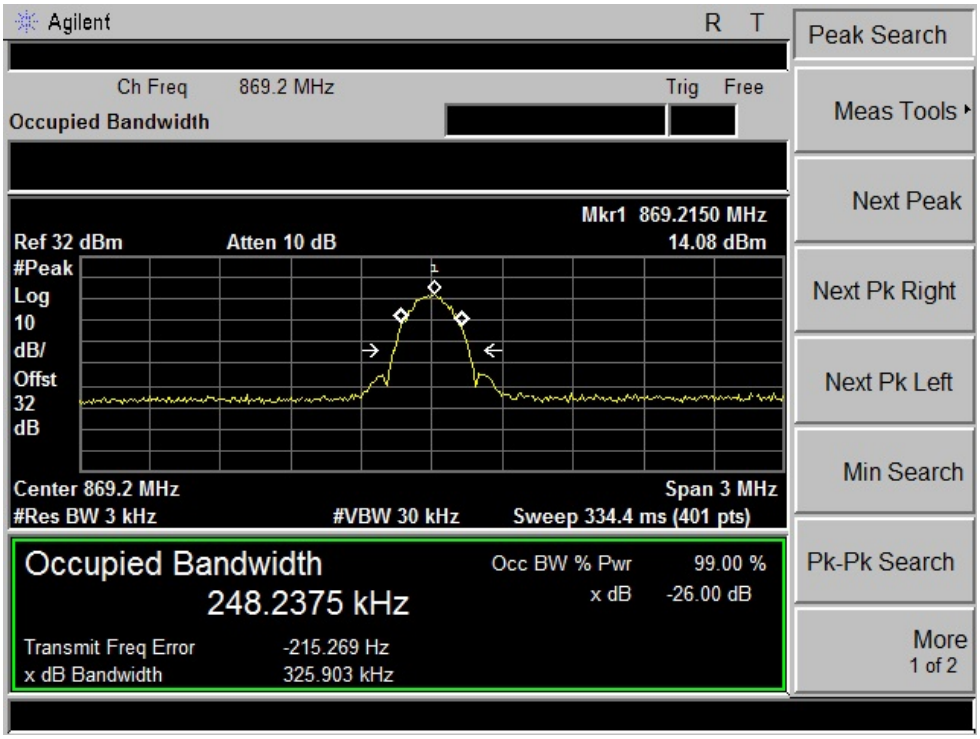


High

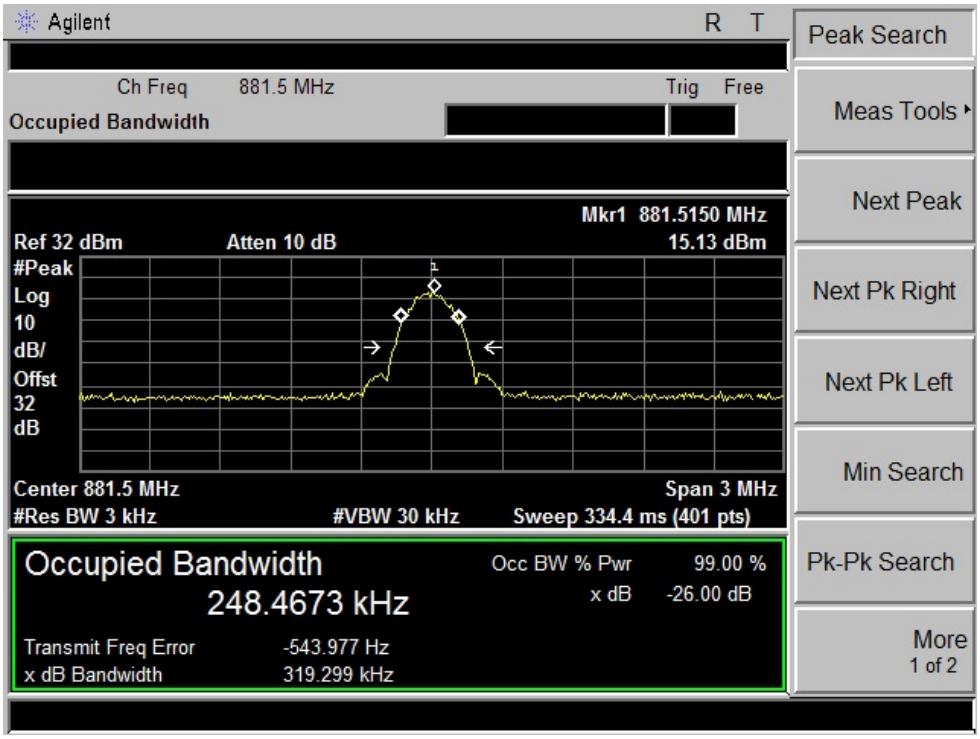

Agilent
R T
Freq/Channel
Ch Freq 893.8 MHz
Trig Free
Occupied Bandwidth
Center Freq
893.800000 MHz
Start Freq
892.300000 MHz
Ref 30 dBm
Atten 20 dB
#Samp
Log
10
dB/
Offst
22
dB
Stop Freq
895.300000 MHz
CF Step
300.000000 kHz
Auto Man
Freq Offset
0.00000000 Hz
Center 893.8 MHz
Span 3 MHz
#Res BW 3 kHz
#VBW 30 kHz
Sweep 528.8 ms (401 pts)
Occupied Bandwidth
236.6840 kHz
Occ BW % Pwr 99.00 %
x dB -26.00 dB
Signal Track
On Off
Transmit Freq Error -4.239 kHz
x dB Bandwidth 302.902 kHz*
Scale Type
Log Lin

Occupied Bandwidth at GSM 850(EDGE)

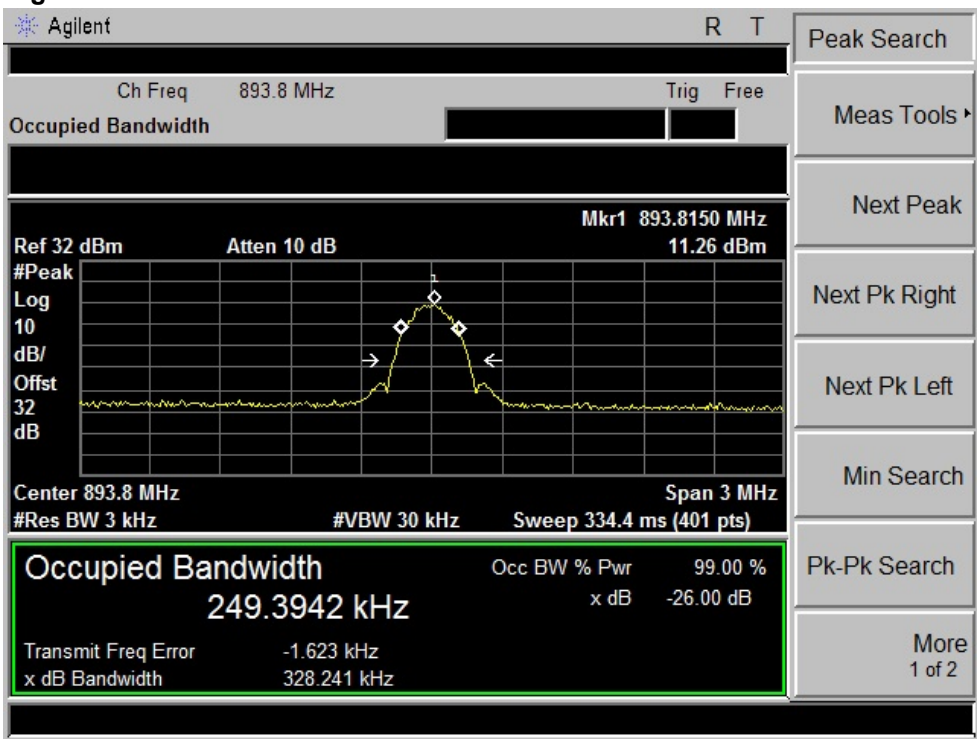
Low



Middle

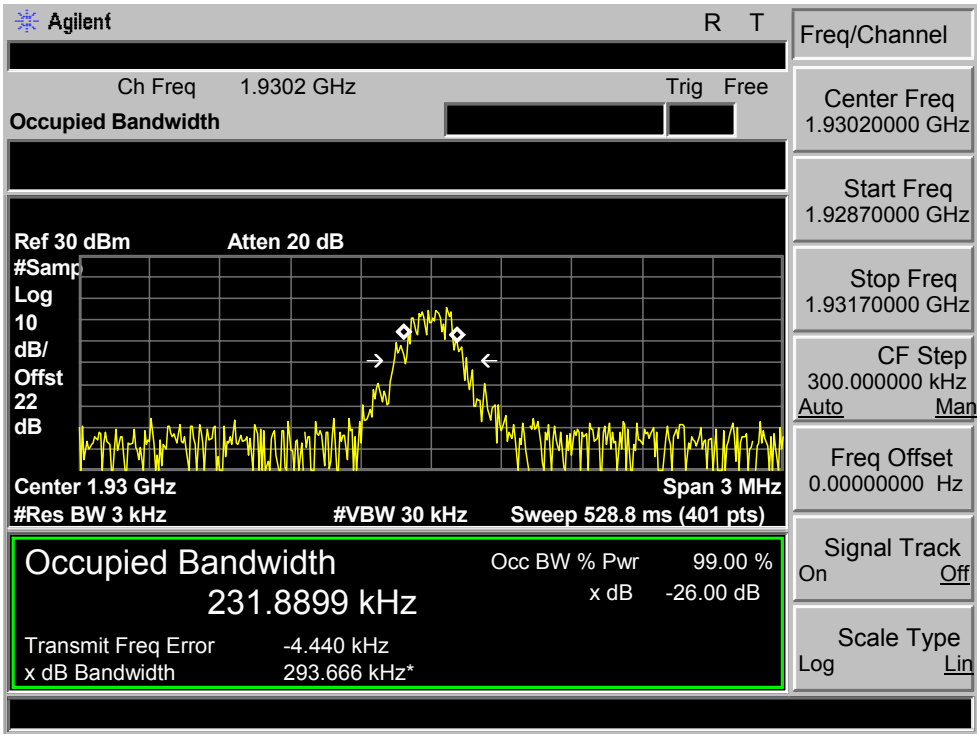


High

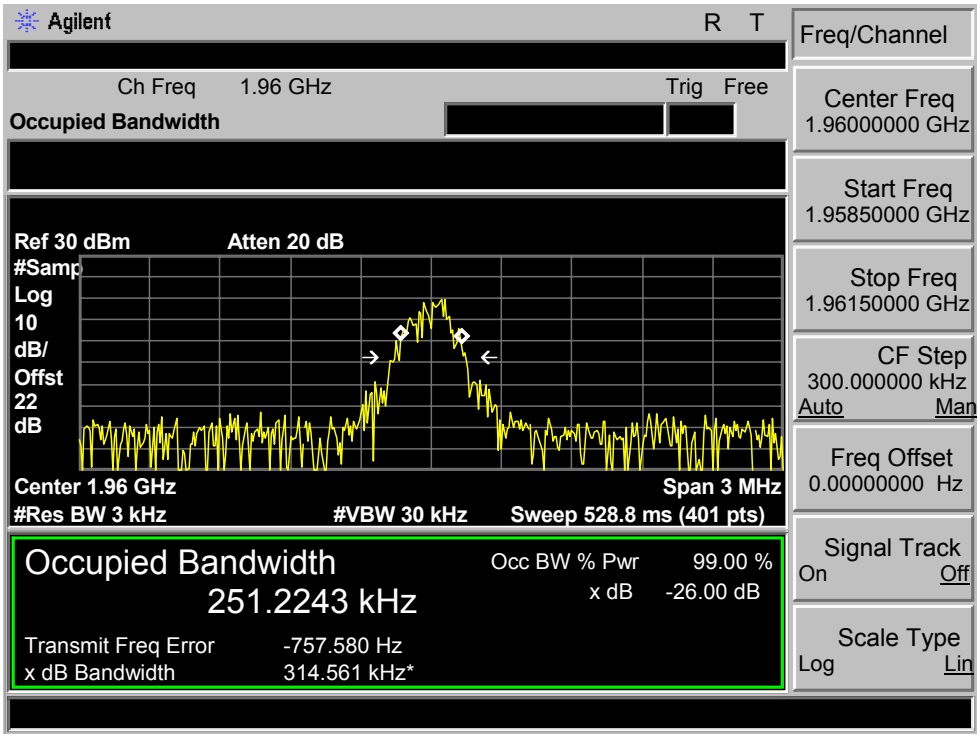

Agilent
R T
Peak Search
Ch Freq 893.8 MHz
Trig Free
Occupied Bandwidth
Meas Tools
Next Peak
Mkr1 893.8150 MHz
Ref 32 dBm
Atten 10 dB
11.26 dBm
#Peak
Log
10
dB/
Offst
32
dB
Next Pk Right
Next Pk Left
Min Search
Center 893.8 MHz
Span 3 MHz
#Res BW 3 kHz
#VBW 30 kHz
Sweep 334.4 ms (401 pts)
Occupied Bandwidth
249.3942 kHz
Occ BW % Pwr 99.00 %
x dB -26.00 dB
Pk-Pk Search
Transmit Freq Error -1.623 kHz
x dB Bandwidth 328.241 kHz
More
1 of 2

Occupied Bandwidth at GSM 1900

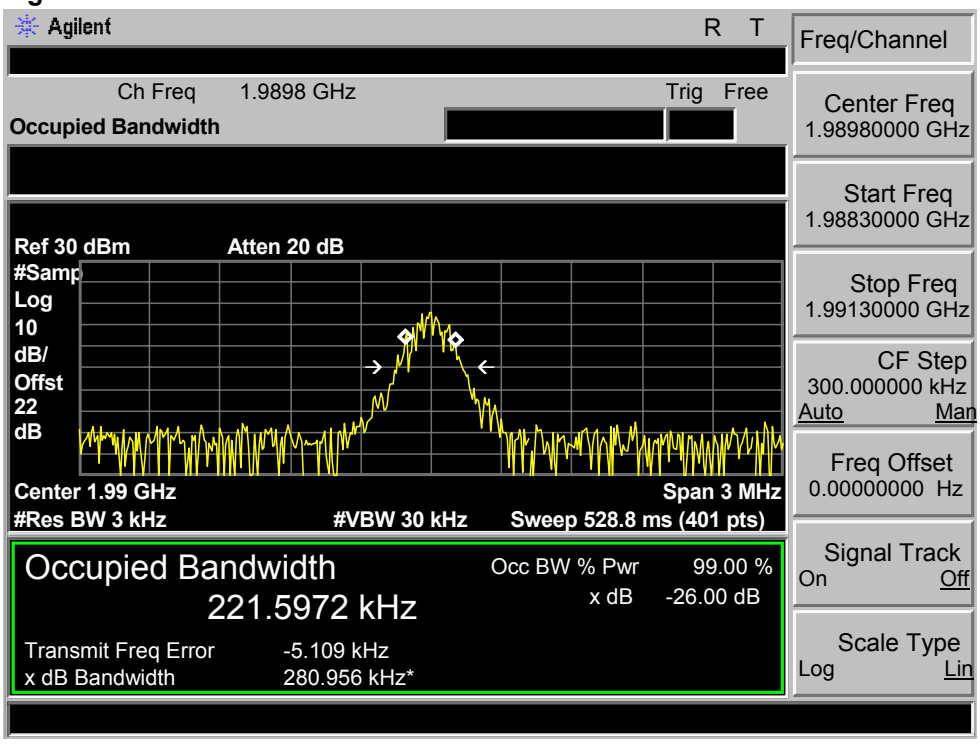
Low



Middle

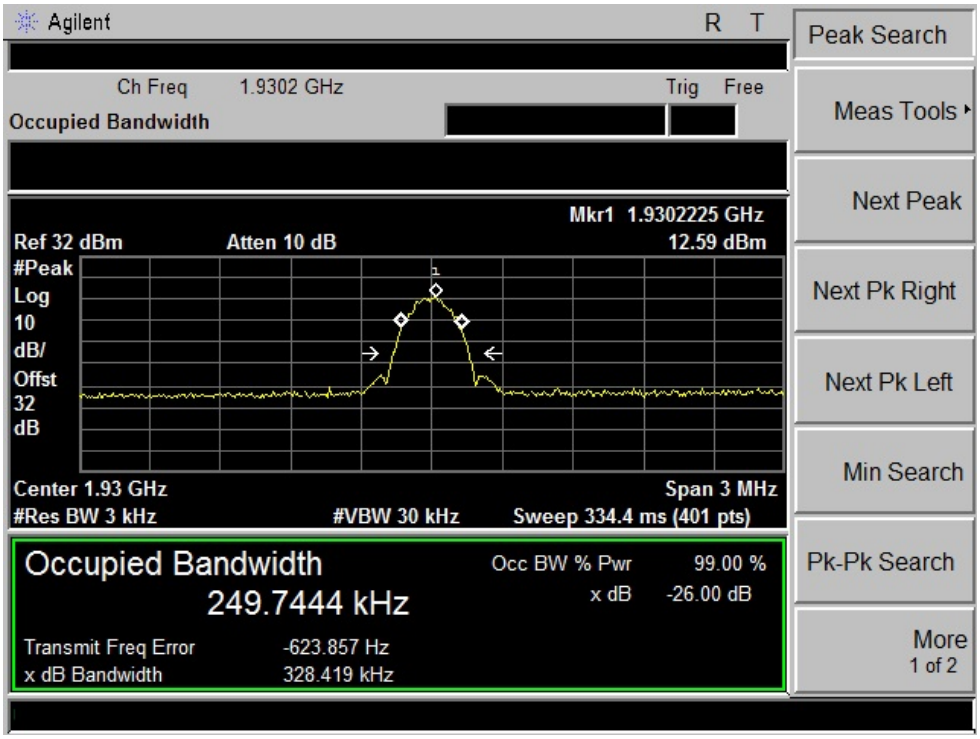


high

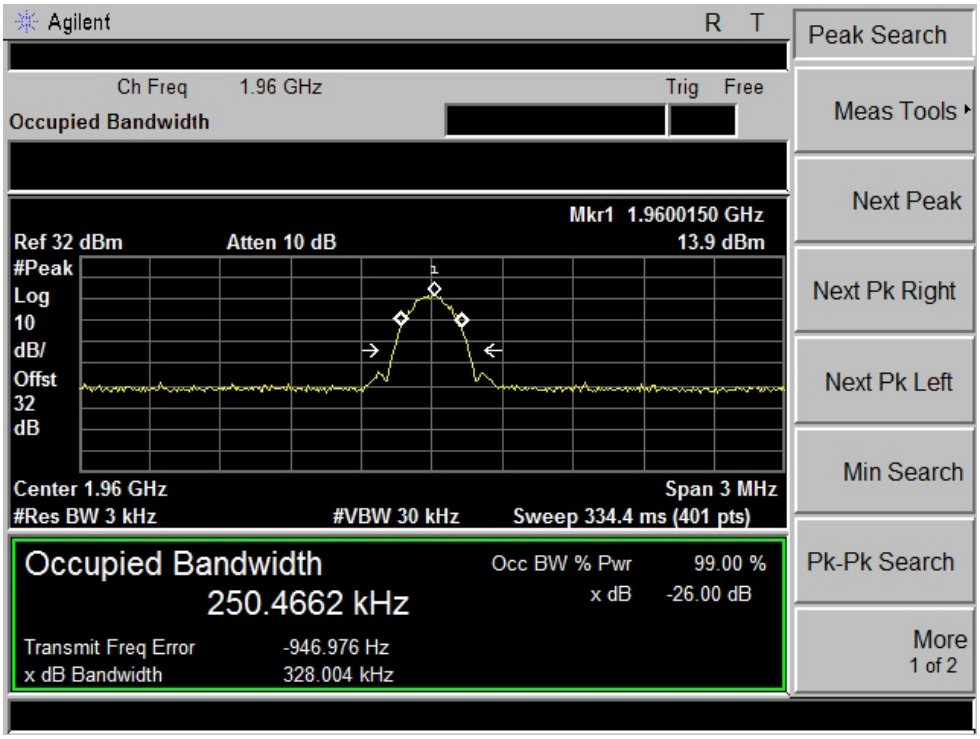

Agilent
R T
Freq/Channel
Ch Freq 1.9898 GHz
Trig Free
Occupied Bandwidth
Center Freq
1.98980000 GHz
Start Freq
1.98830000 GHz
Stop Freq
1.99130000 GHz
CF Step
300.000000 kHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Scale Type
Log Lin
Ref 30 dBm
Atten 20 dB
#Samp
Log
10
dB/
Offst
22
dB
Center 1.99 GHz
Span 3 MHz
#Res BW 3 kHz
#VBW 30 kHz
Sweep 528.8 ms (401 pts)
Occupied Bandwidth
221.5972 kHz
Occ BW % Pwr 99.00 %
x dB -26.00 dB
Transmit Freq Error -5.109 kHz
x dB Bandwidth 280.956 kHz*

Occupied Bandwidth at GSM 1900(EDGE)

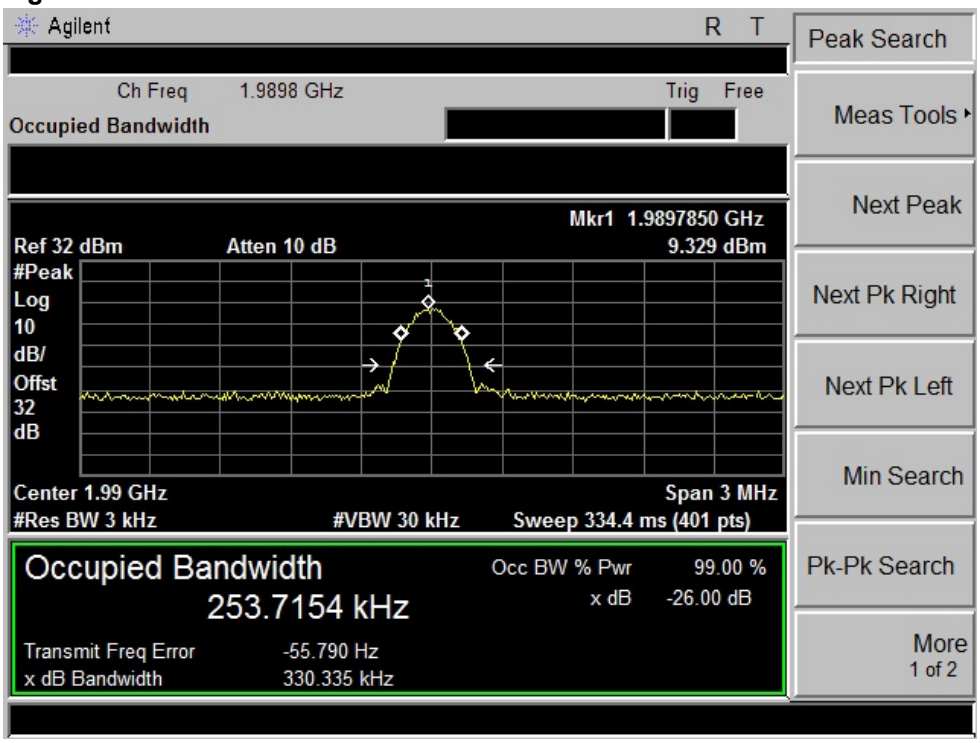
Low



Middle

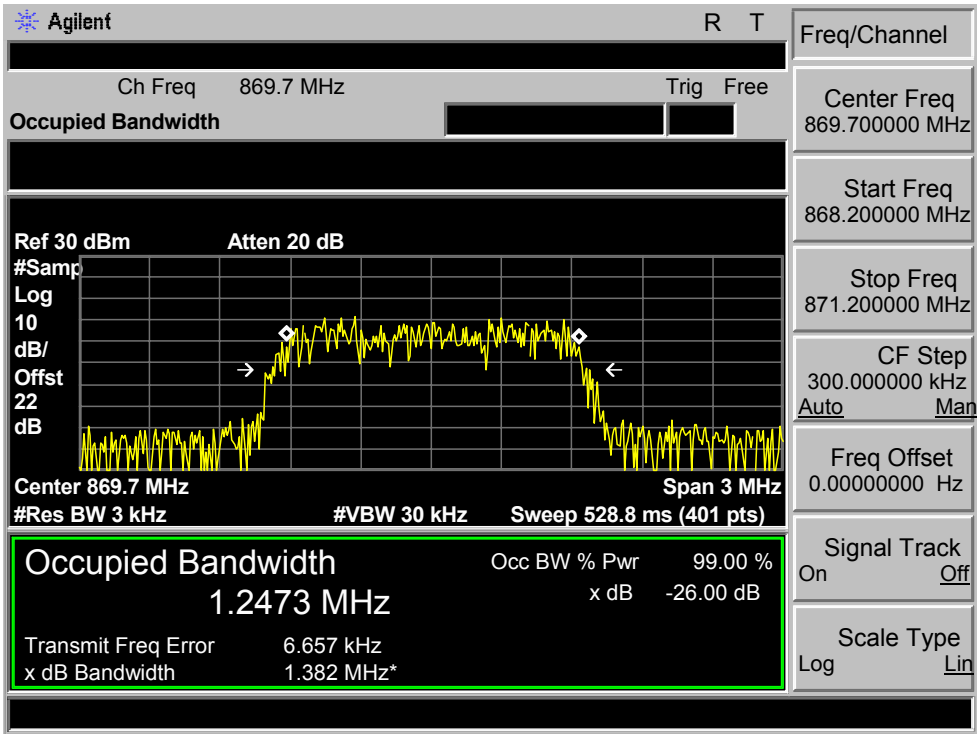


high

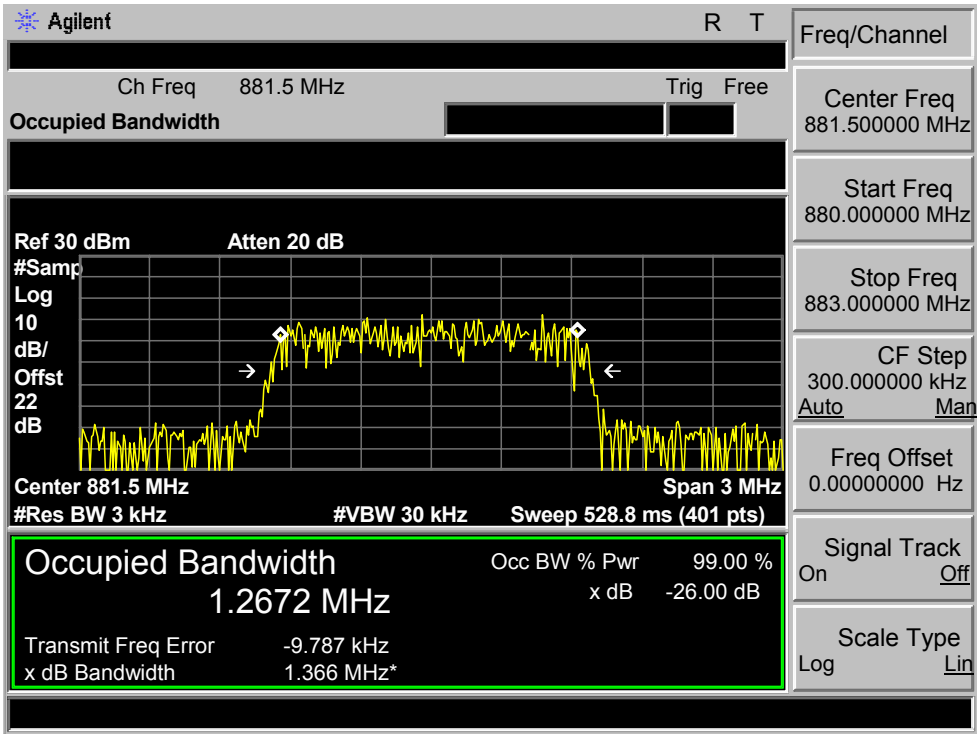

Agilent
R T
Ch Freq 1.9898 GHz
Trig Free
Occupied Bandwidth
Mkr1 1.9897850 GHz
Ref 32 dBm
Atten 10 dB
9.329 dBm
#Peak
Log
10
dB/
Offst
32
dB
Center 1.99 GHz
Span 3 MHz
#Res BW 3 kHz
#VBW 30 kHz
Sweep 334.4 ms (401 pts)
Occupied Bandwidth
253.7154 kHz
Occ BW % Pwr 99.00 %
x dB -26.00 dB
Transmit Freq Error -55.790 Hz
x dB Bandwidth 330.335 kHz
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

Occupied Bandwidth at CDMA 850

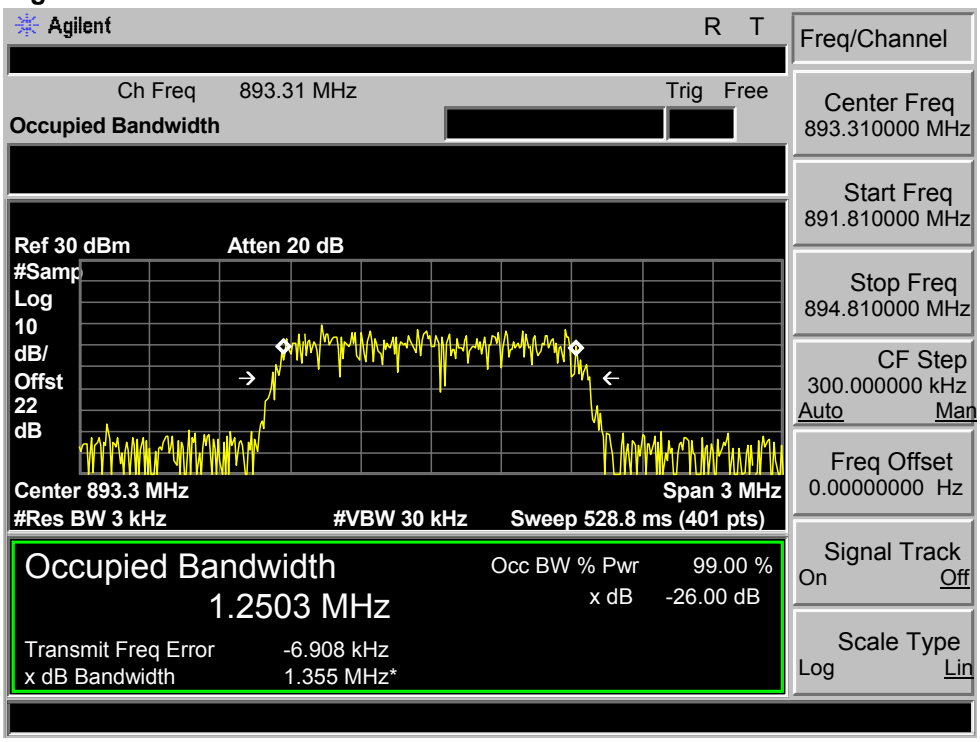
Low



Middle

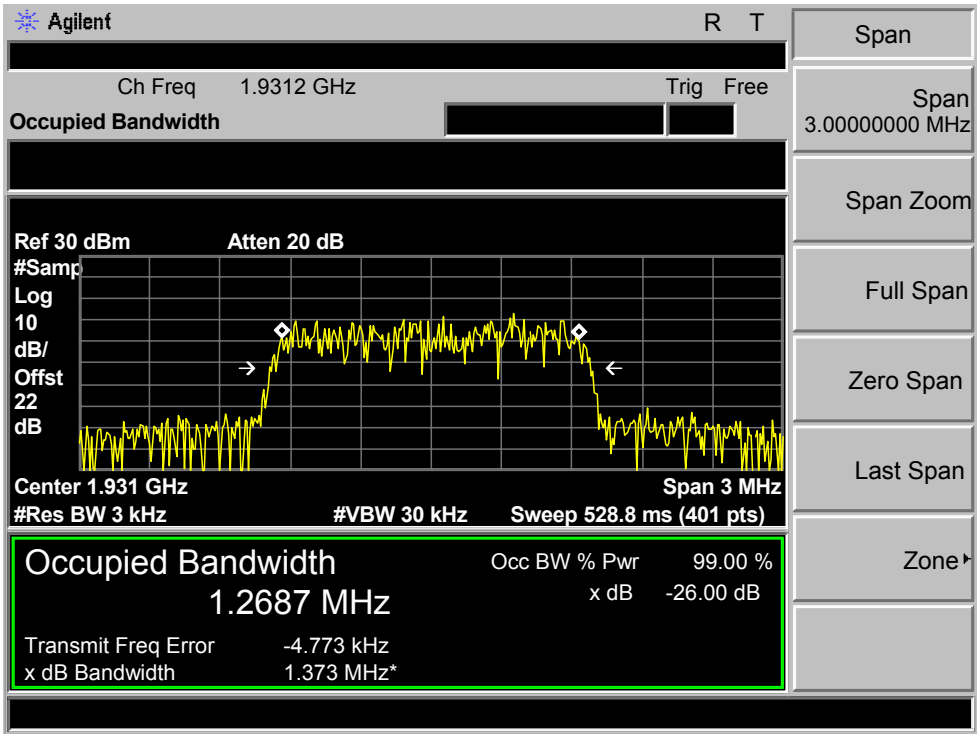


High


Agilent
R T
Ch Freq 893.31 MHz
Trig Free
Occupied Bandwidth
Ref 30 dBm
Atten 20 dB
#Samp
Log
10
dB/
Offst
22
dB
Center 893.3 MHz
Span 3 MHz
#Res BW 3 kHz
#VBW 30 kHz
Sweep 528.8 ms (401 pts)
Occupied Bandwidth
1.2503 MHz
Occ BW % Pwr 99.00 %
x dB -26.00 dB
Transmit Freq Error -6.908 kHz
x dB Bandwidth 1.355 MHz*
Freq/Channel
Center Freq
893.310000 MHz
Start Freq
891.810000 MHz
Stop Freq
894.810000 MHz
CF Step
300.000000 kHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Scale Type
Log Lin

Occupied Bandwidth at CDMA 1900

Low



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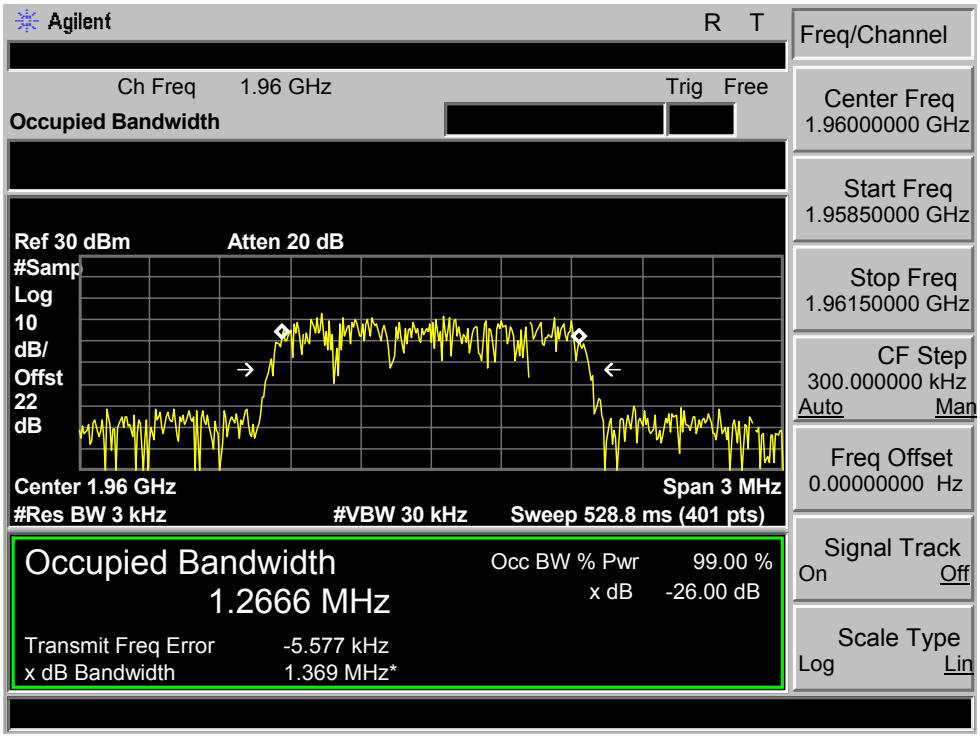

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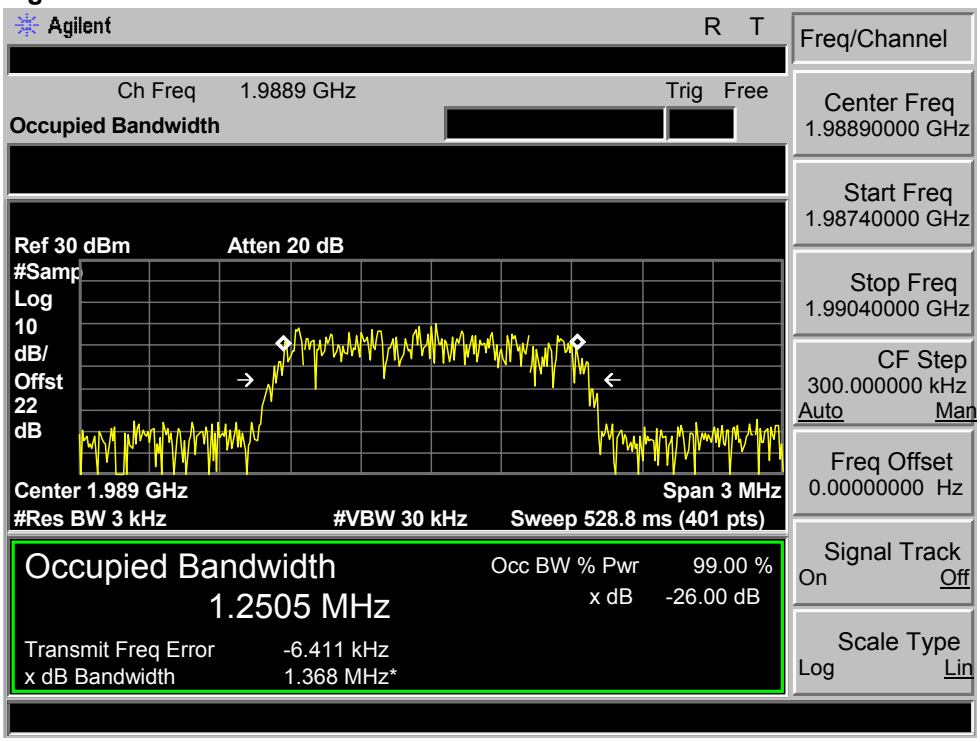
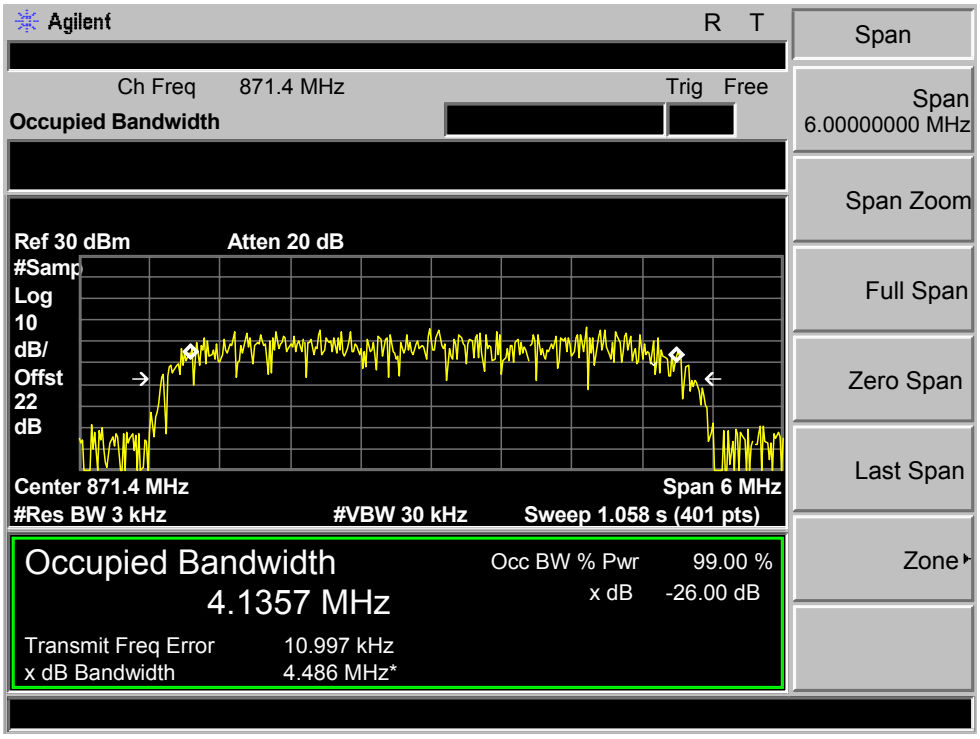
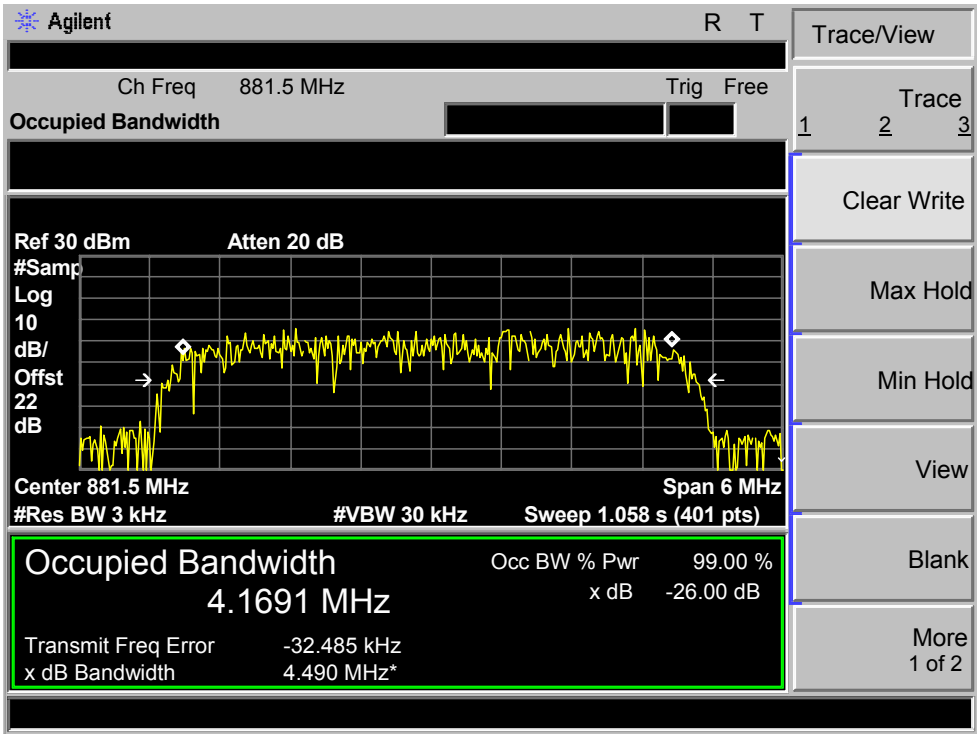

Agilent
R T
Freq/Channel
Ch Freq 1.9889 GHz
Trig Free
Occupied Bandwidth
Center Freq
1.98890000 GHz
Start Freq
1.98740000 GHz
Stop Freq
1.99040000 GHz
CF Step
300.000000 kHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Scale Type
Log Lin
Ref 30 dBm
Atten 20 dB
#Samp
Log
10
dB/
Offst
22
dB
Center 1.989 GHz
Span 3 MHz
#Res BW 3 kHz
#VBW 30 kHz
Sweep 528.8 ms (401 pts)
Occupied Bandwidth
1.2505 MHz
Occ BW % Pwr 99.00 %
x dB -26.00 dB
Transmit Freq Error -6.411 kHz
x dB Bandwidth 1.368 MHz*

Occupied Bandwidth at WCDMA 850

Low



Middle



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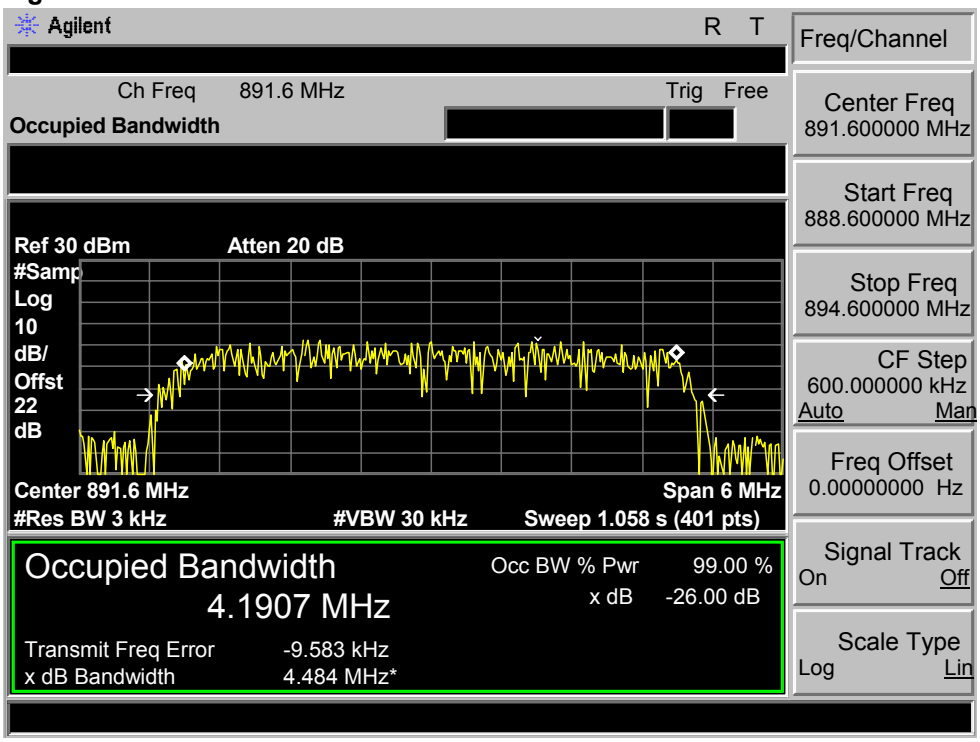
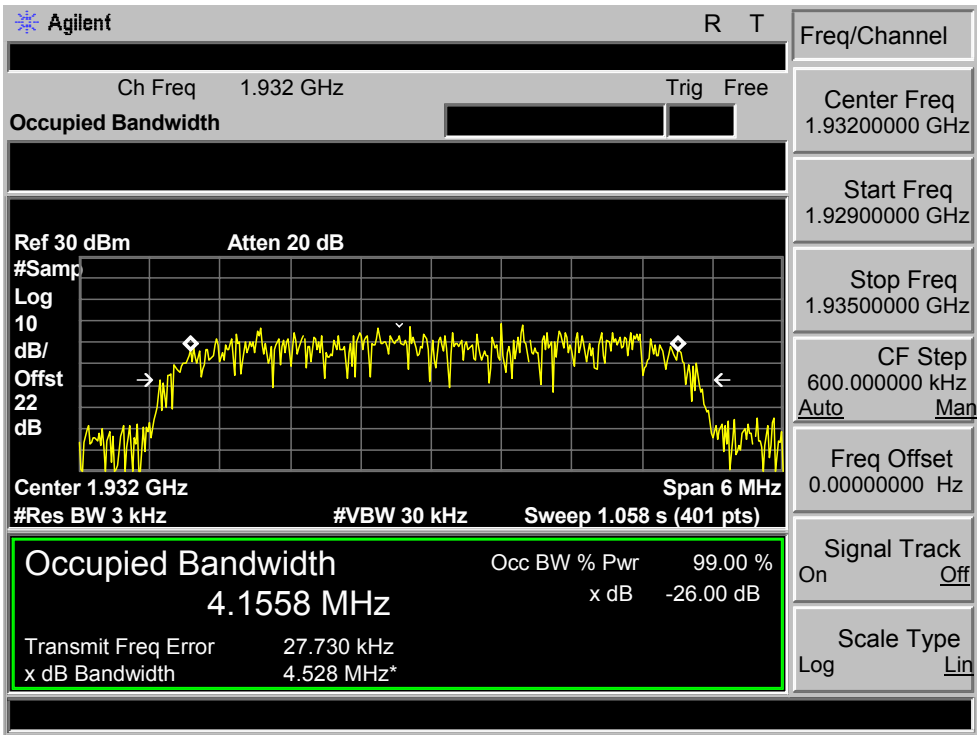
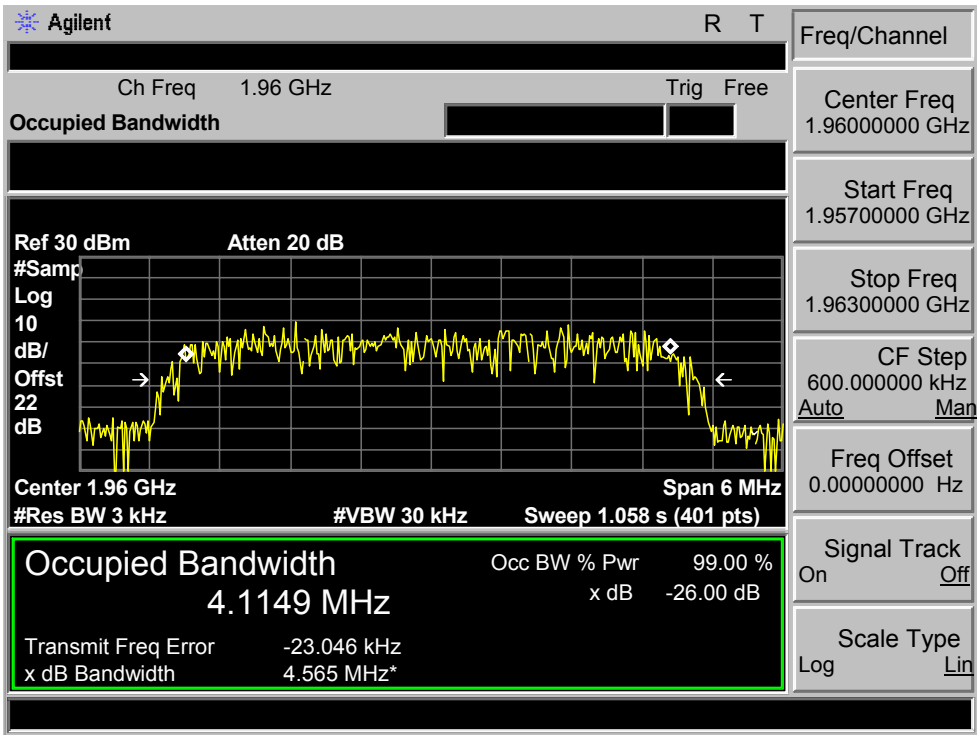

Agilent
R T
Freq/Channel
Ch Freq 891.6 MHz
Trig Free
Occupied Bandwidth
Center Freq
891.600000 MHz
Start Freq
888.600000 MHz
Stop Freq
894.600000 MHz
CF Step
600.000000 kHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Scale Type
Log Lin
Ref 30 dBm
Atten 20 dB
#Samp
Log
10
dB/
Offst
22
dB
Center 891.6 MHz
#Res BW 3 kHz
#VBW 30 kHz
Span 6 MHz
Sweep 1.058 s (401 pts)
Occupied Bandwidth
4.1907 MHz
Occ BW % Pwr 99.00 %
x dB -26.00 dB
Transmit Freq Error -9.583 kHz
x dB Bandwidth 4.484 MHz*

Occupied Bandwidth at WCDMA 1900

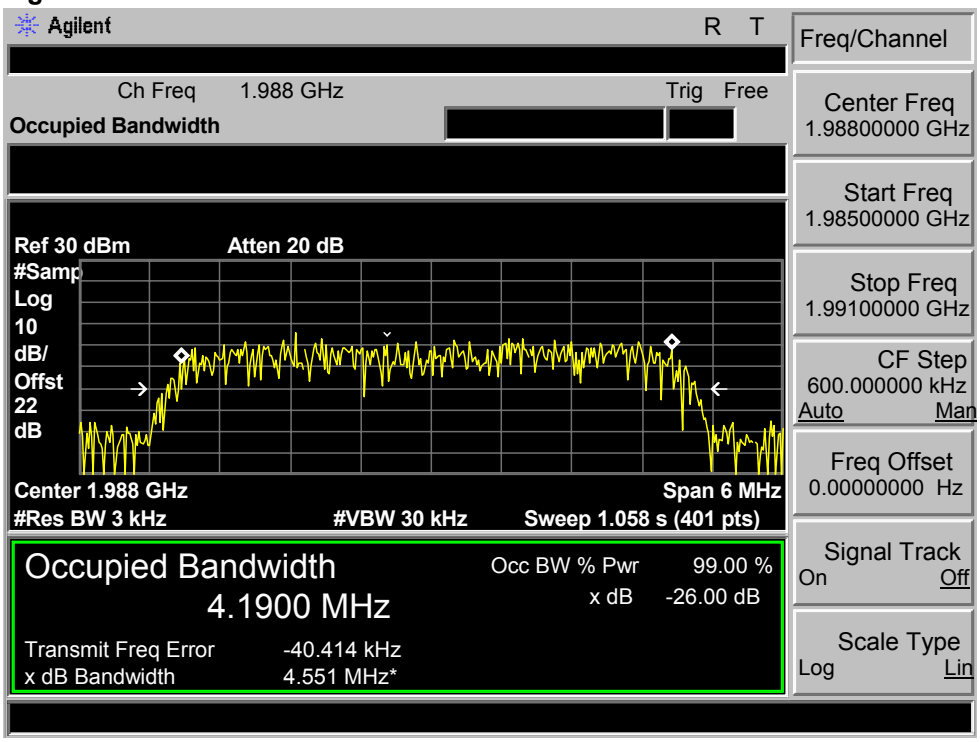
Low



Middle



high


Agilent
R T
Ch Freq 1.988 GHz
Trig Free
Occupied Bandwidth
Ref 30 dBm
Atten 20 dB
#Samp
Log
10
dB/
Offst
22
dB
Center 1.988 GHz
Span 6 MHz
#Res BW 3 kHz
#VBW 30 kHz
Sweep 1.058 s (401 pts)
Occupied Bandwidth
4.1900 MHz
Occ BW % Pwr 99.00 %
x dB -26.00 dB
Transmit Freq Error -40.414 kHz
x dB Bandwidth 4.551 MHz*
Freq/Channel
Center Freq
1.98800000 GHz
Start Freq
1.98500000 GHz
Stop Freq
1.99100000 GHz
CF Step
600.000000 kHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Scale Type
Log Lin

3.2.3 Out-of –Band Emission at antenna terminal

1) Requirement

The power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least (43 + 10 log P) dB. Note: That corresponds to the level of -13 dBm for any out-of-band and spurious emissions.

2) Test Procedure

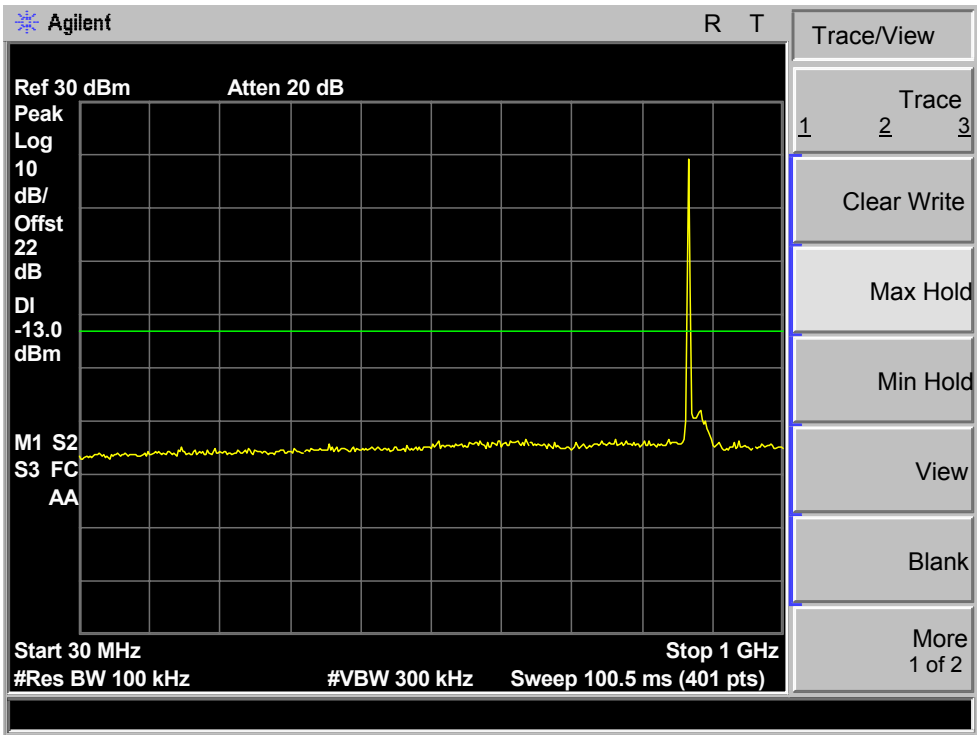
The EUT RF output was connected to spectrum analyzer. The EUT was setup to transmit the maximum power. The spectrum analyzer resolution bandwidth (RBW) was set to 1 MHz in the PCS band and 100 kHz in the Cell band. For measurements at the band edges, the resolution bandwidth (RBW) was set to 100 kHz. Measurements were performed at three frequencies at the low, middle, and high channels for all modulations types. Inter-modulation was performed by injecting two modulated signals into the EUT. One signal was set at the bandedge of Down Link band and the other signal was set 6 MHz away.

3) Test Result : complies

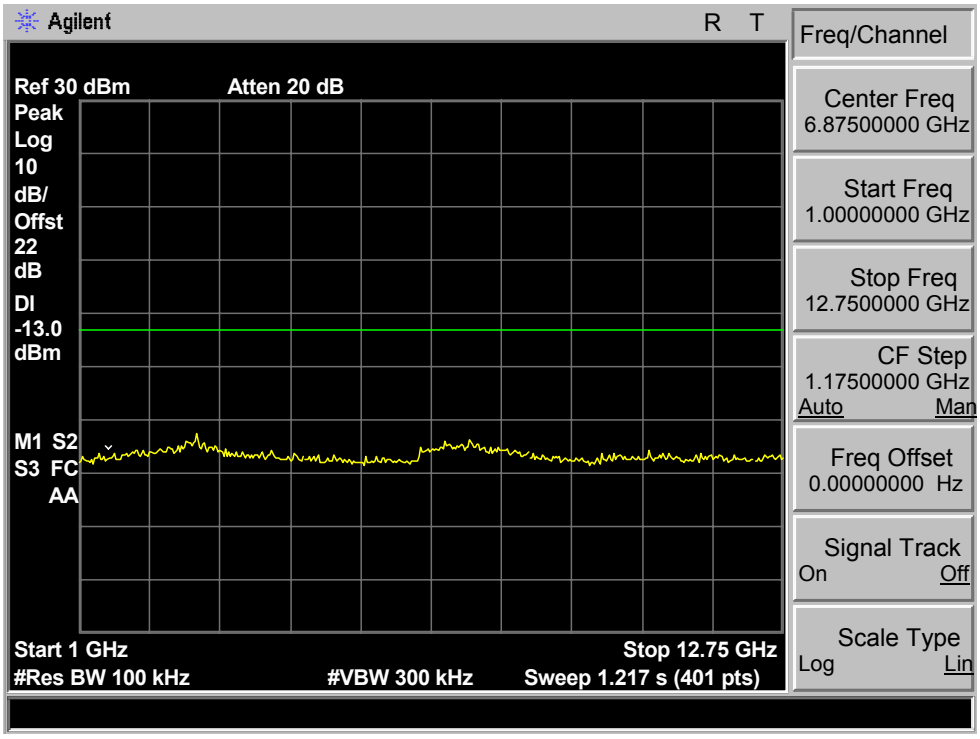
Refer to the following graphs.

Antenna Terminal Spurious Emission at GSM 850

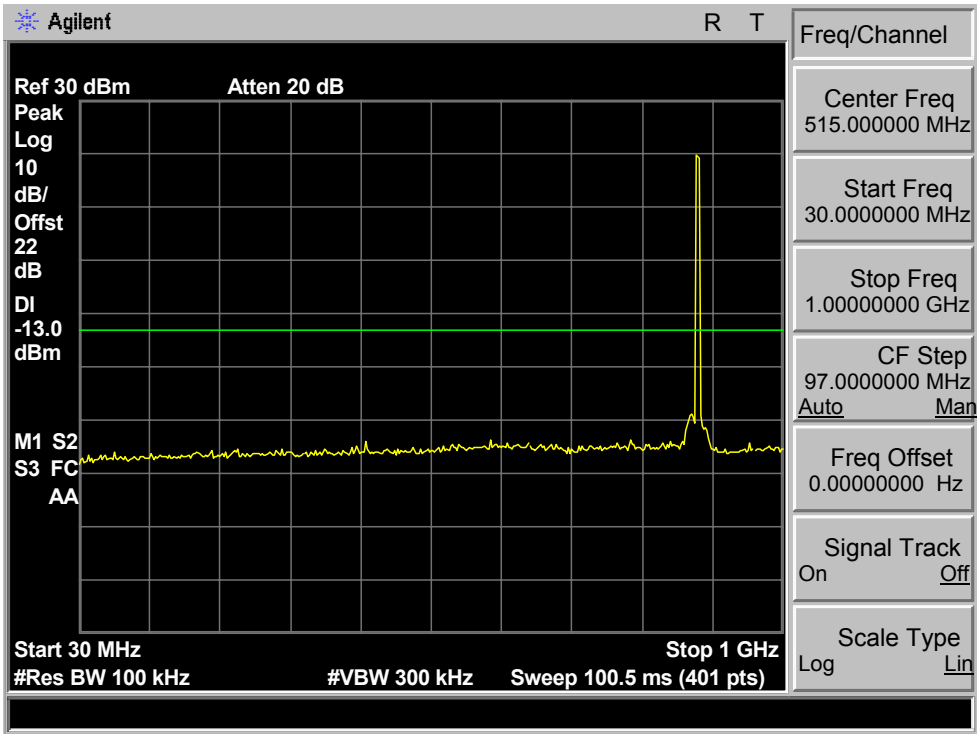
Low



Low



Middle



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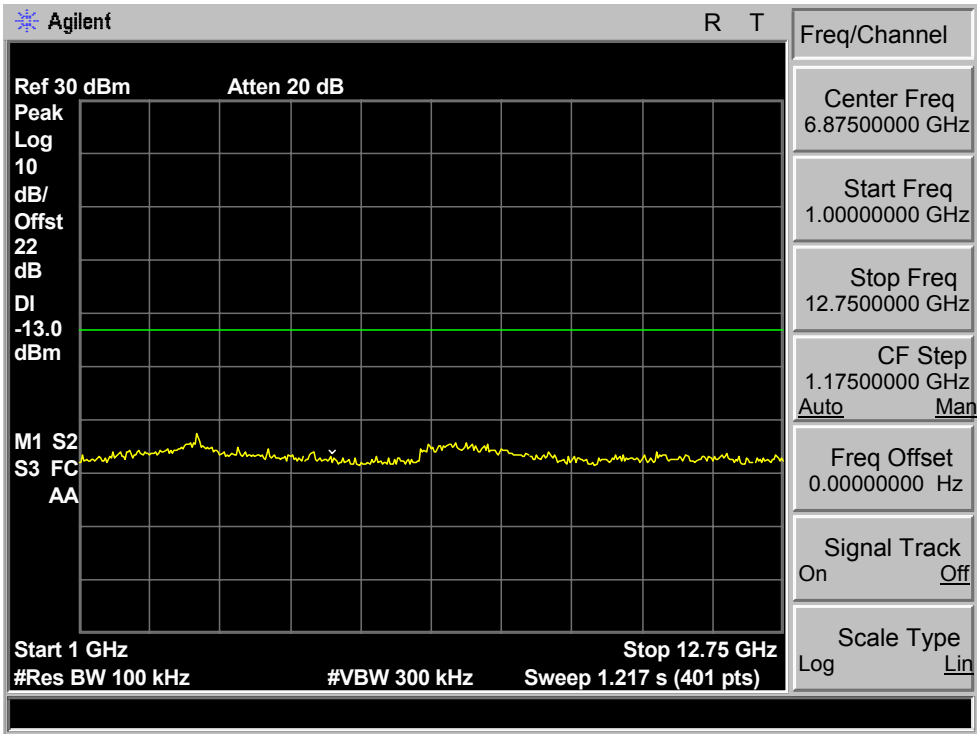
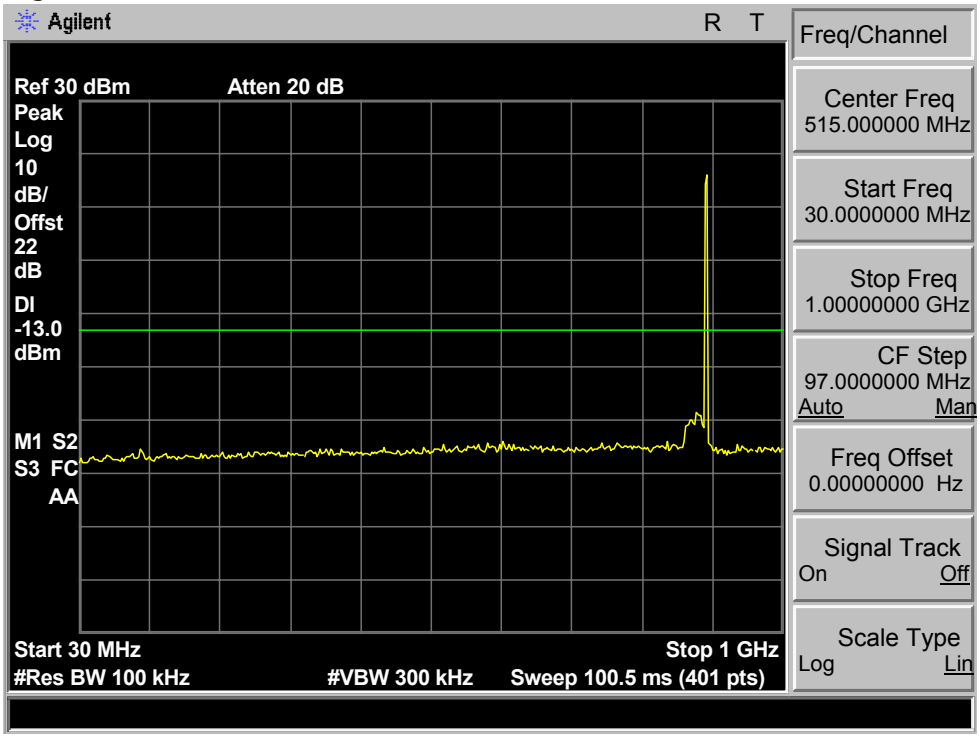
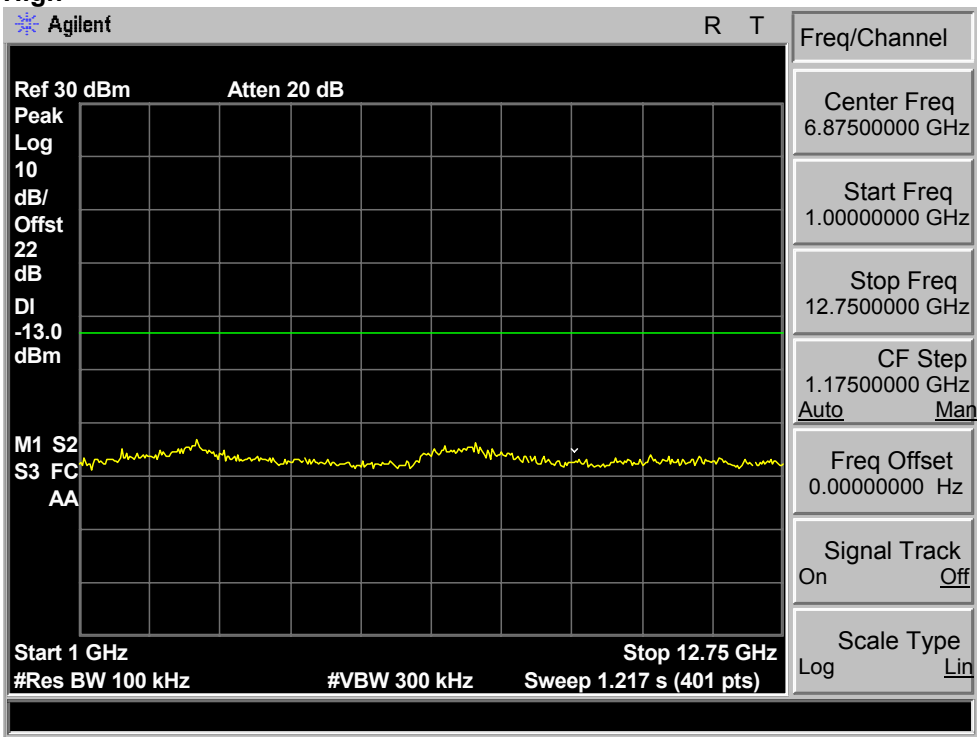


High


Agilent
R T
Ref 30 dBm
Atten 20 dB
Peak
Log
10
dB/
Offst
22
dB
Dl
-13.0
dBm
M1 S2
S3 FC
AA
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1 GHz
Sweep 100.5 ms (401 pts)
Freq/Channel
Center Freq
515.000000 MHz
Start Freq
30.0000000 MHz
Stop Freq
1.00000000 GHz
CF Step
97.0000000 MHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Scale Type
Log
Lin

High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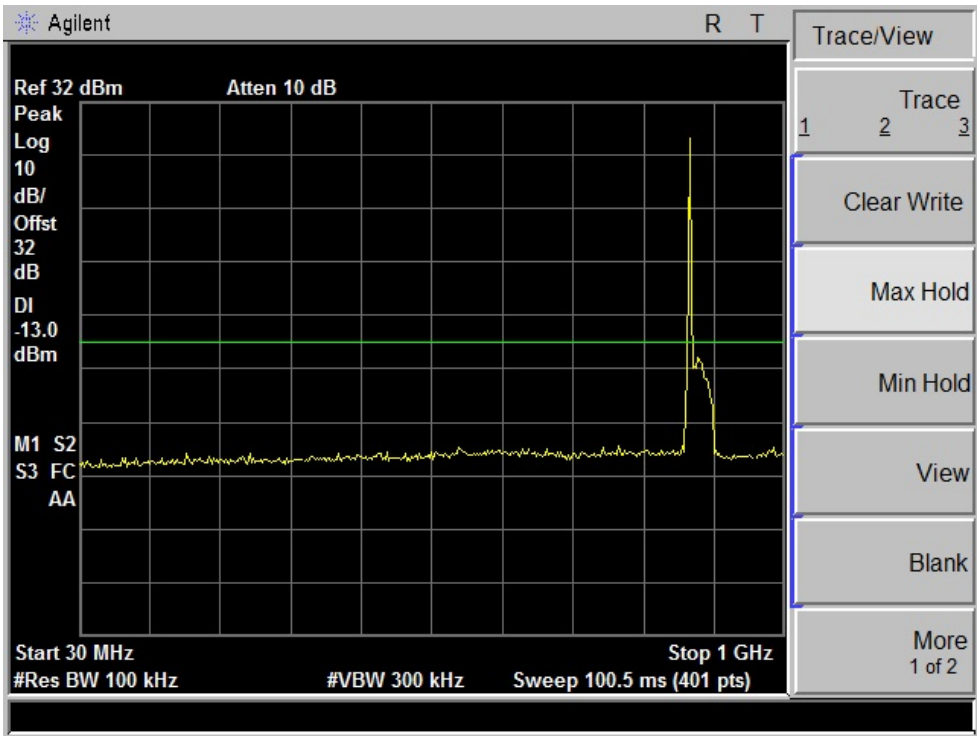
R T
Ref 30 dBm
Atten 20 dB
Peak
Log
10
dB/
Offst
22
dB
Dl
-13.0
dBm
M1 S2
S3 FC
AA
Start 1 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 12.75 GHz
Sweep 1.217 s (401 pts)
Freq/Channel
Center Freq
6.87500000 GHz
Start Freq
1.00000000 GHz
Stop Freq
12.7500000 GHz
CF Step
1.17500000 GHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Scale Type
Log
Lin

Antenna Terminal Spurious Emission at GSM 850 (EDGE)

Low



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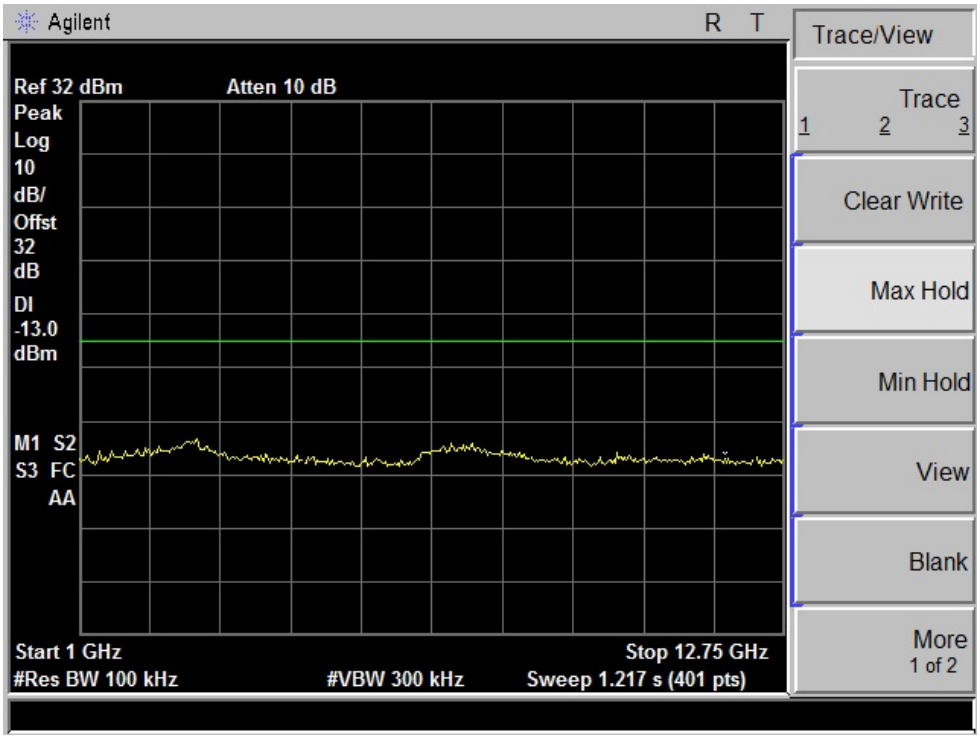

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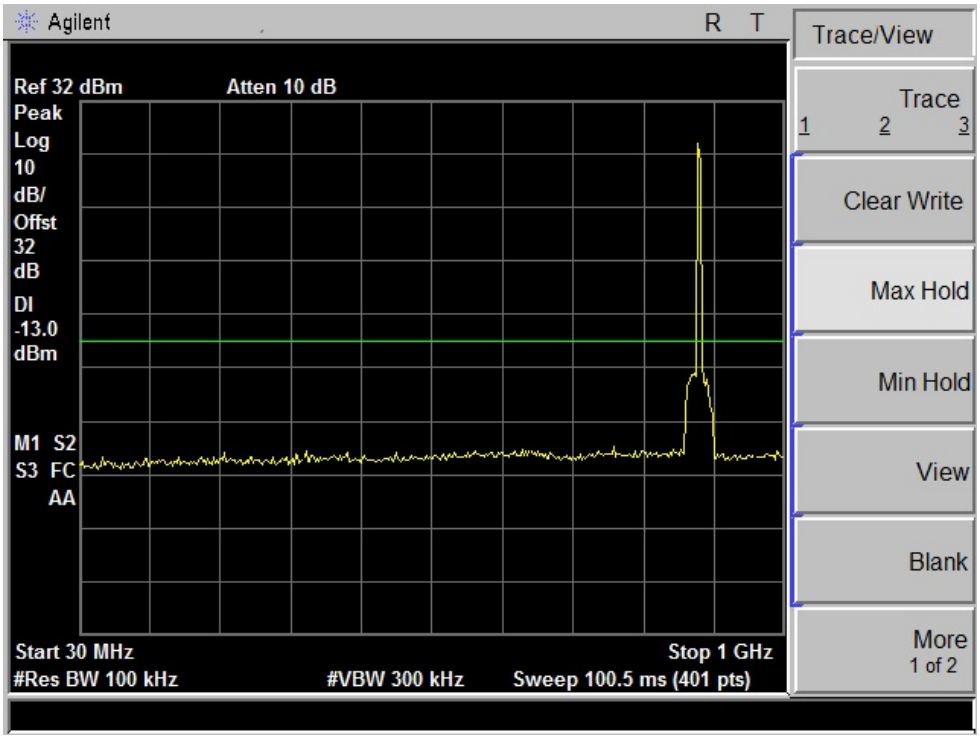
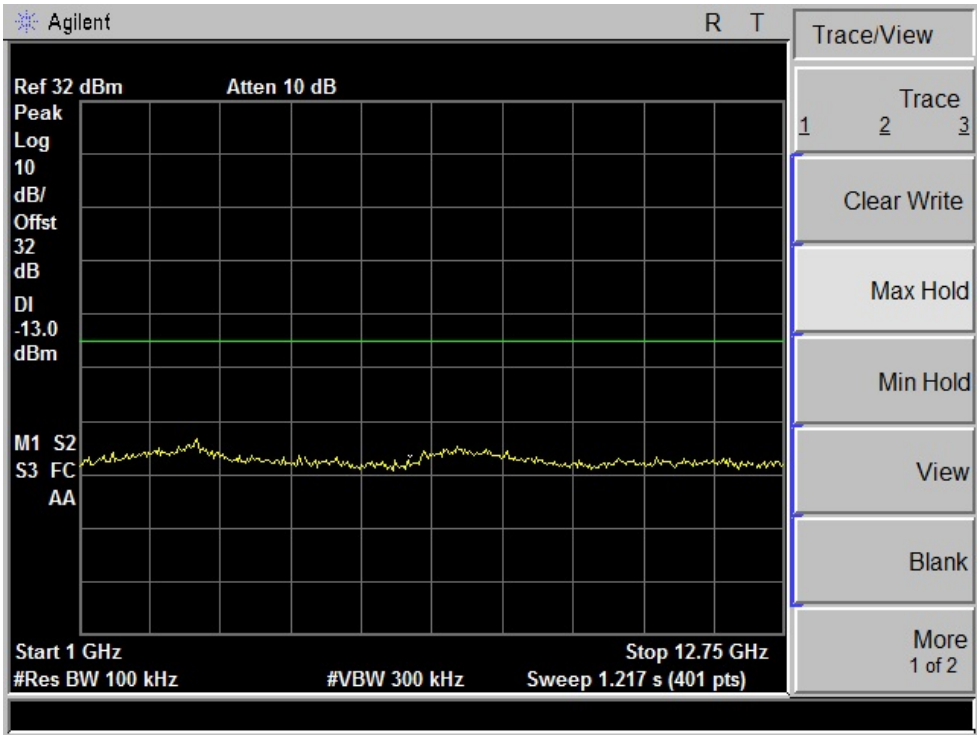


Middle



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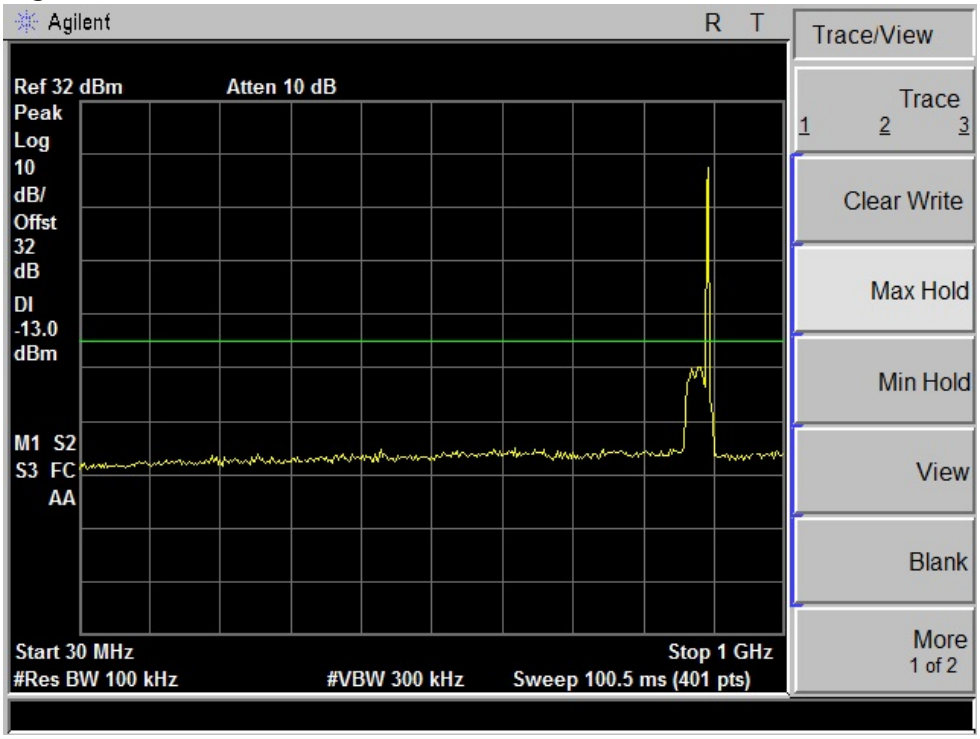
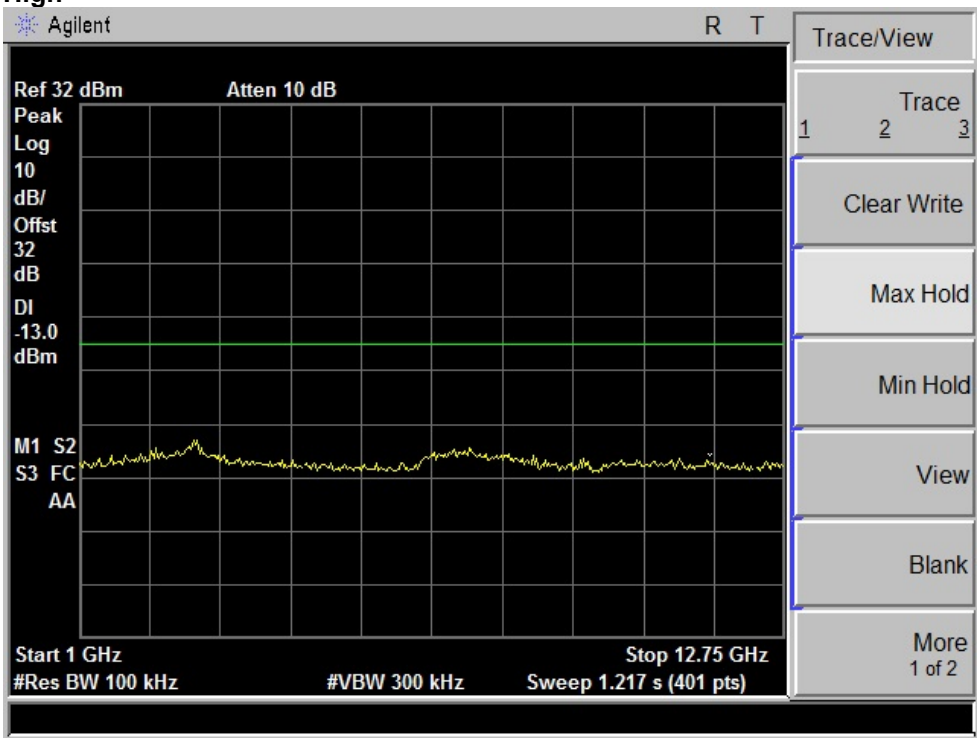

Agilent
R T
Trace/View
Ref 32 dBm
Atten 10 dB
Peak
Log
10
dB/
Offst
32
dB
Dl
-13.0
dBm
M1 S2
S3 FC
AA
Trace
1 2 3
Clear Write
Max Hold
Min Hold
View
Blank
More
1 of 2
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1 GHz
Sweep 100.5 ms (401 pts)

High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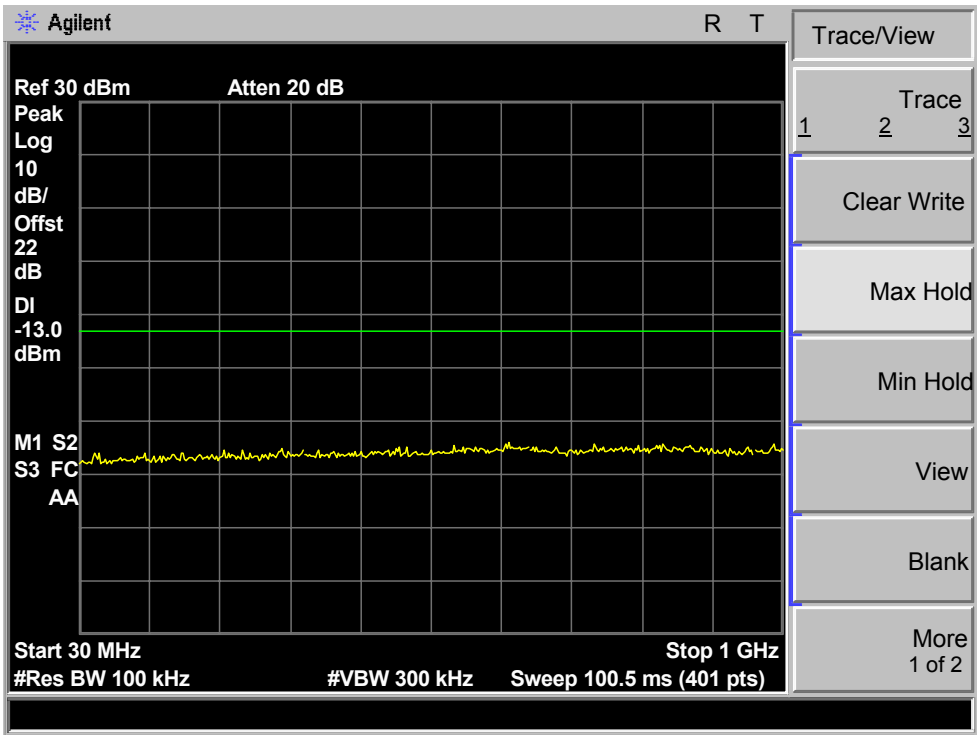
R T
Trace/View
Ref 32 dBm
Atten 10 dB
Peak
Log
10
dB/
Offst
32
dB
Dl
-13.0
dBm
M1 S2
S3 FC
AA
Trace
1 2 3
Clear Write
Max Hold
Min Hold
View
Blank
More
1 of 2
Start 1 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 12.75 GHz
Sweep 1.217 s (401 pts)

Antenna Terminal Spurious Emission at GSM 1900

Low



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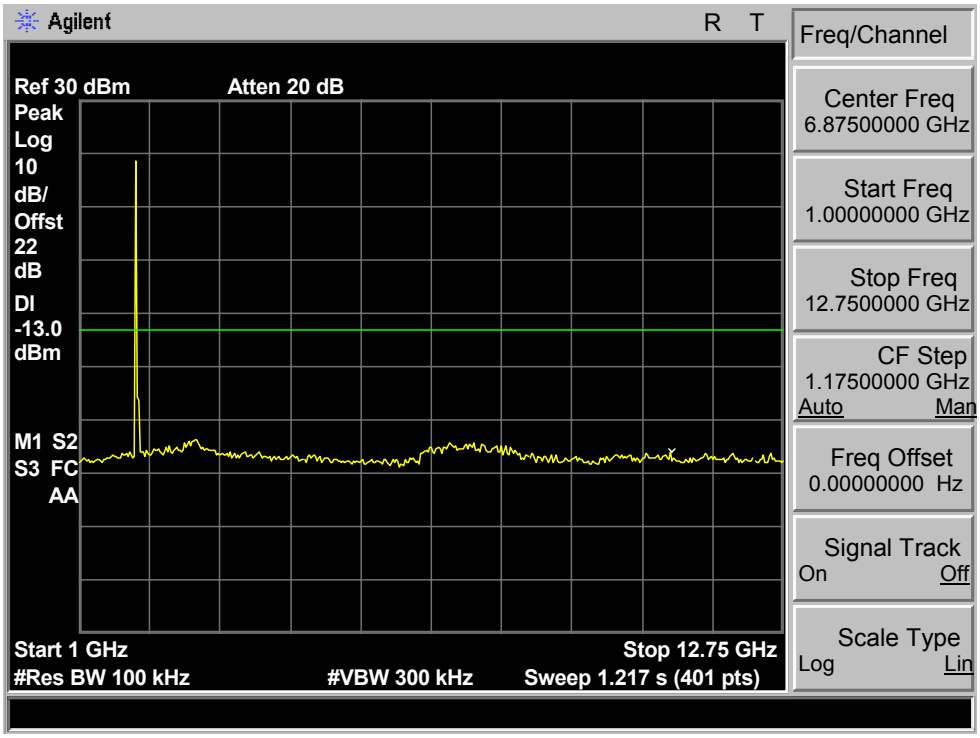
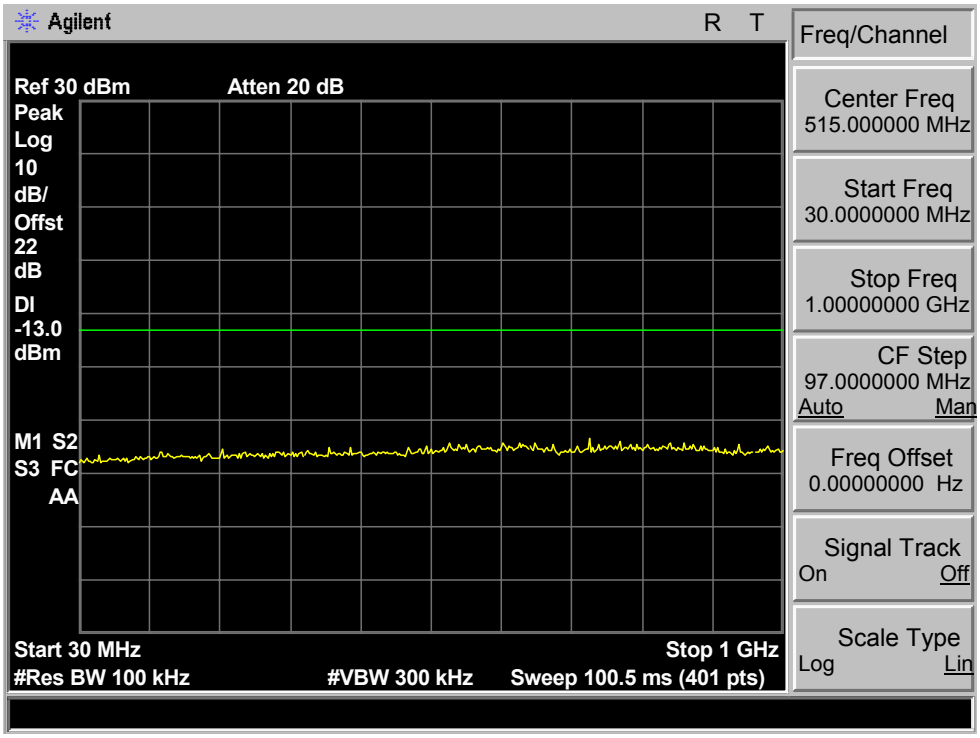


Middle



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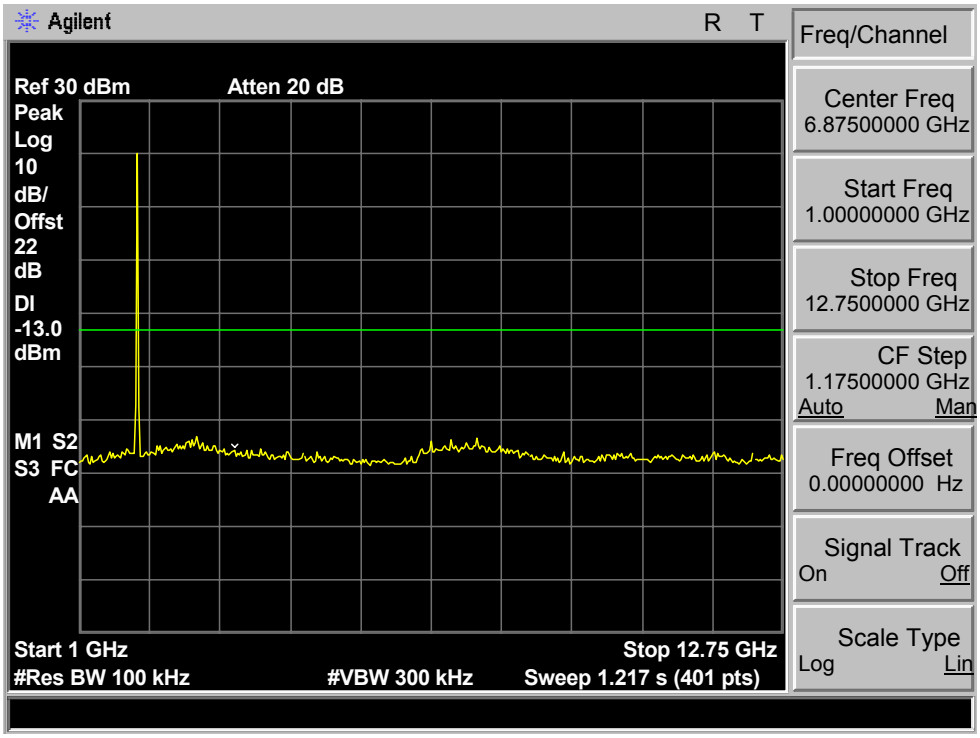

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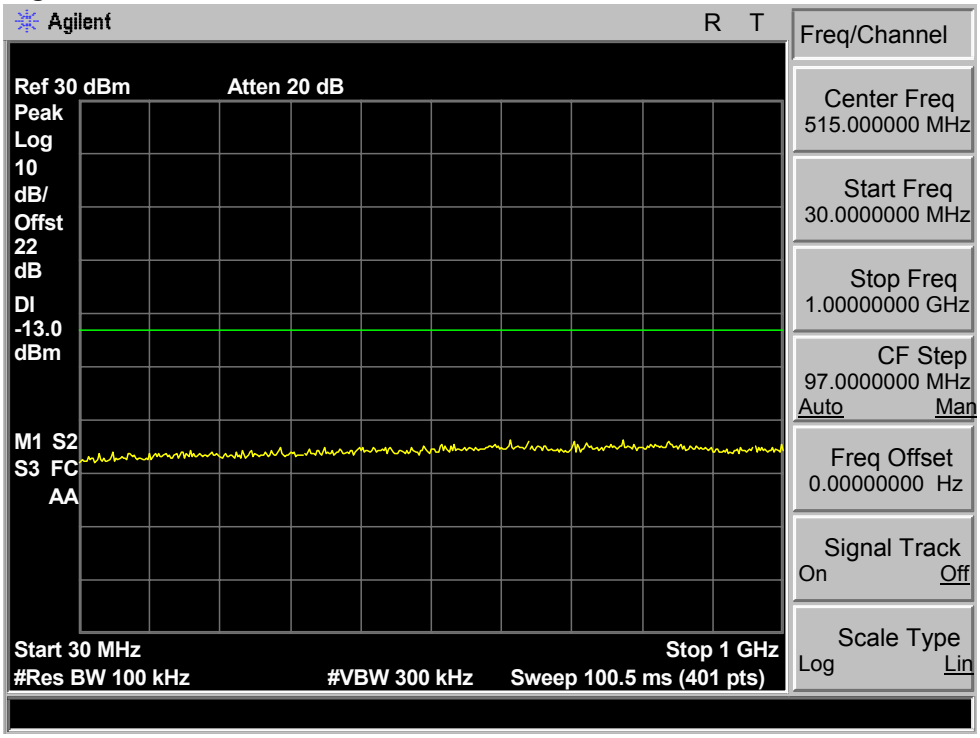
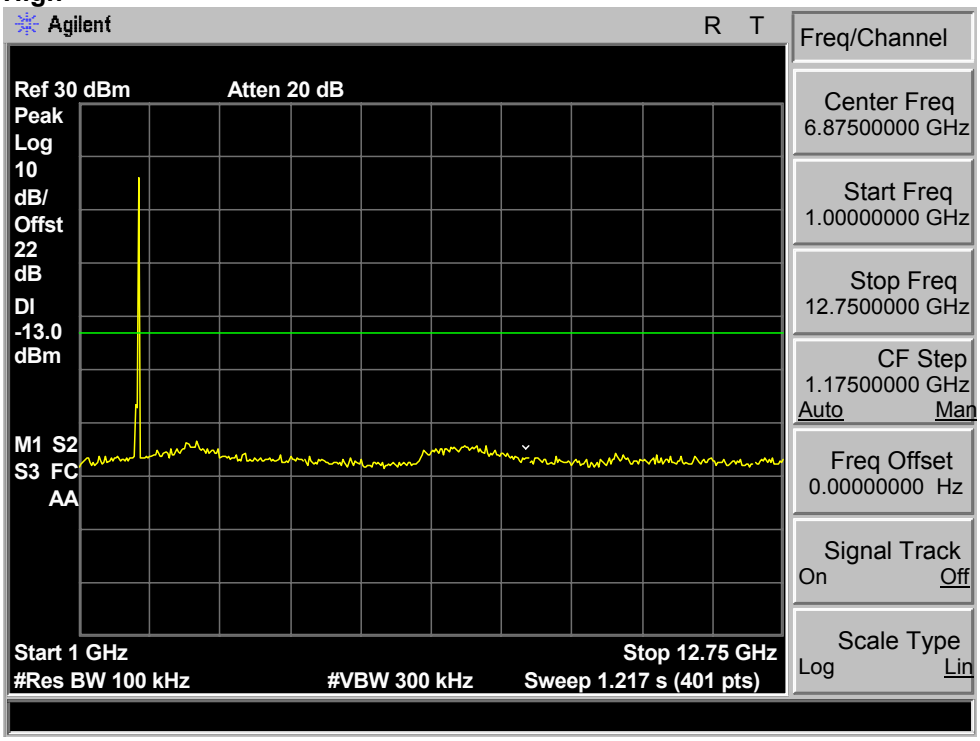
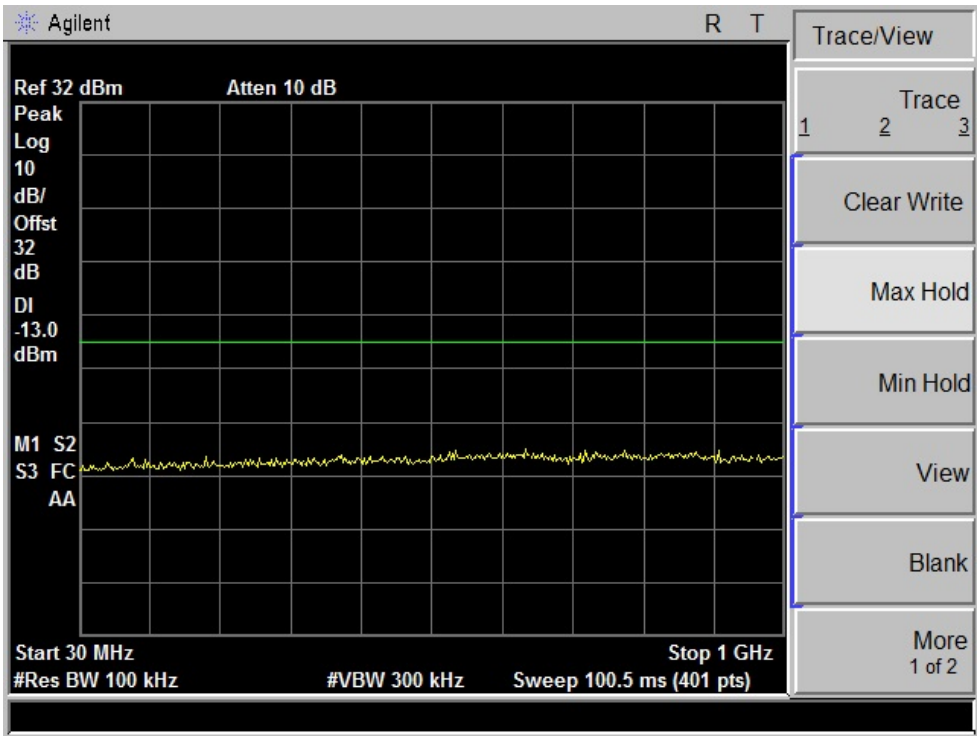

Agilent
R T
Ref 30 dBm
Atten 20 dB
Peak
Log
10
dB/
Offst
22
dB
Dl
-13.0
dBm
M1 S2
S3 FC
AA
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1 GHz
Sweep 100.5 ms (401 pts)
Freq/Channel
Center Freq
515.000000 MHz
Start Freq
30.0000000 MHz
Stop Freq
1.00000000 GHz
CF Step
97.0000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Scale Type
Log Lin

High


Agilent
R T
Ref 30 dBm
Atten 20 dB
Peak
Log
10
dB/
Offst
22
dB
Dl
-13.0
dBm
M1 S2
S3 FC
AA
Start 1 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 12.75 GHz
Sweep 1.217 s (401 pts)
Freq/Channel
Center Freq
6.87500000 GHz
Start Freq
1.00000000 GHz
Stop Freq
12.7500000 GHz
CF Step
1.17500000 GHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Scale Type
Log Lin

Antenna Terminal Spurious Emission at GSM 1900 (EDGE)

Low



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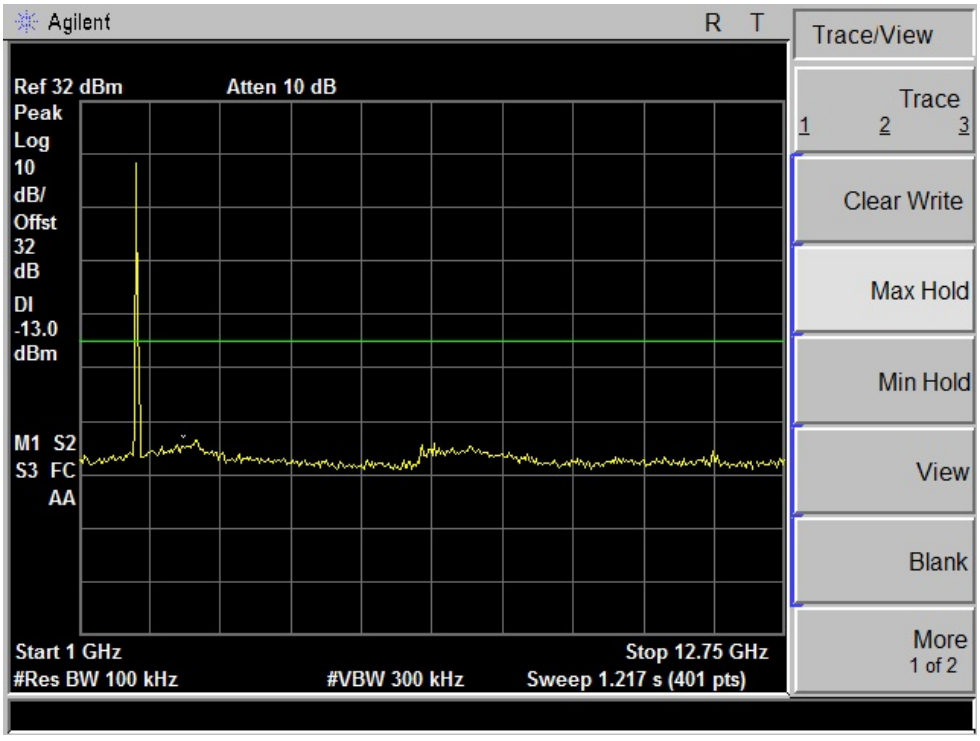

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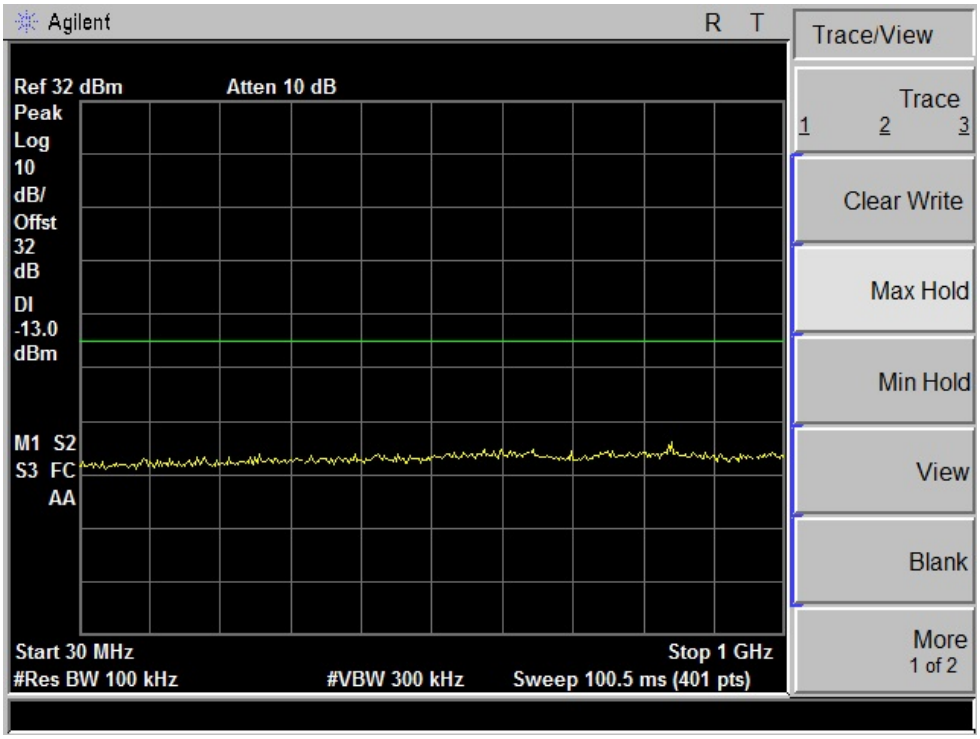

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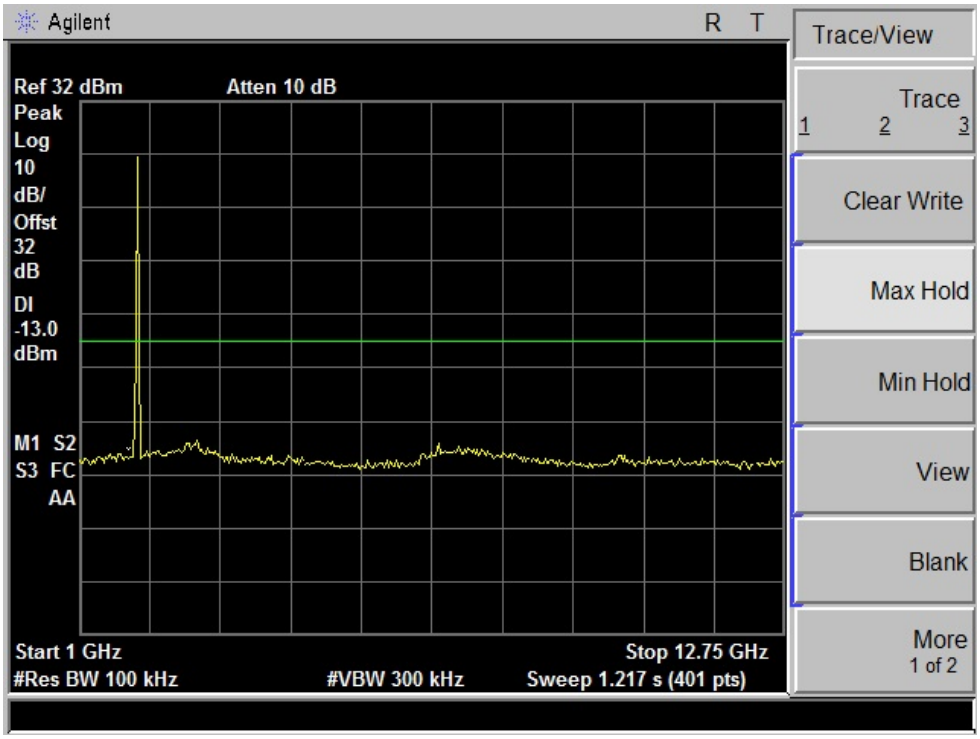

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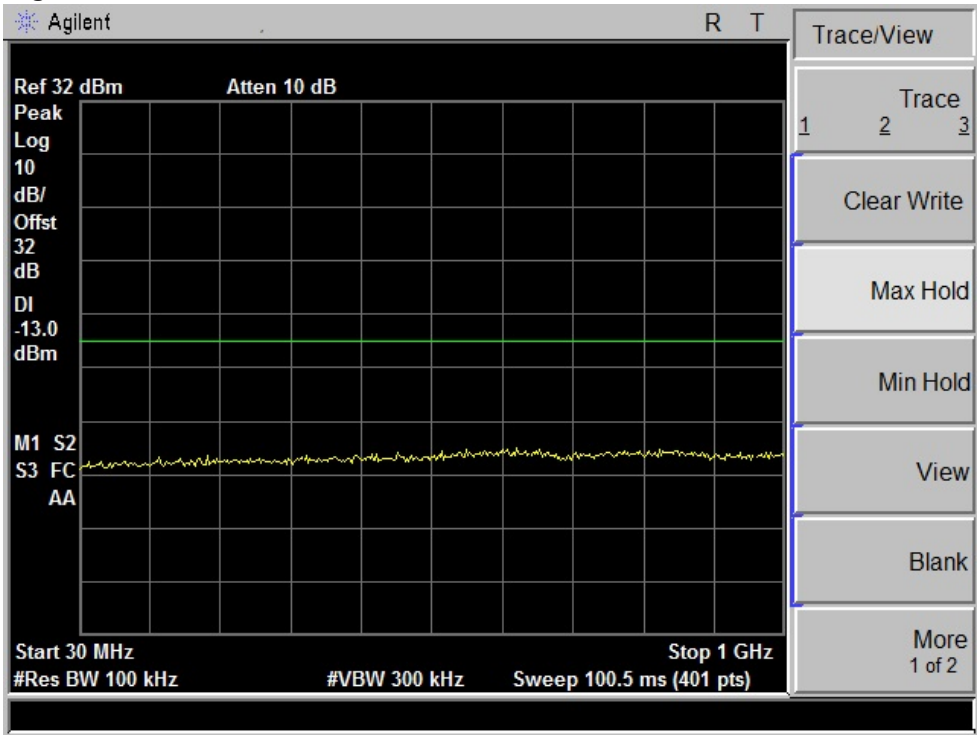
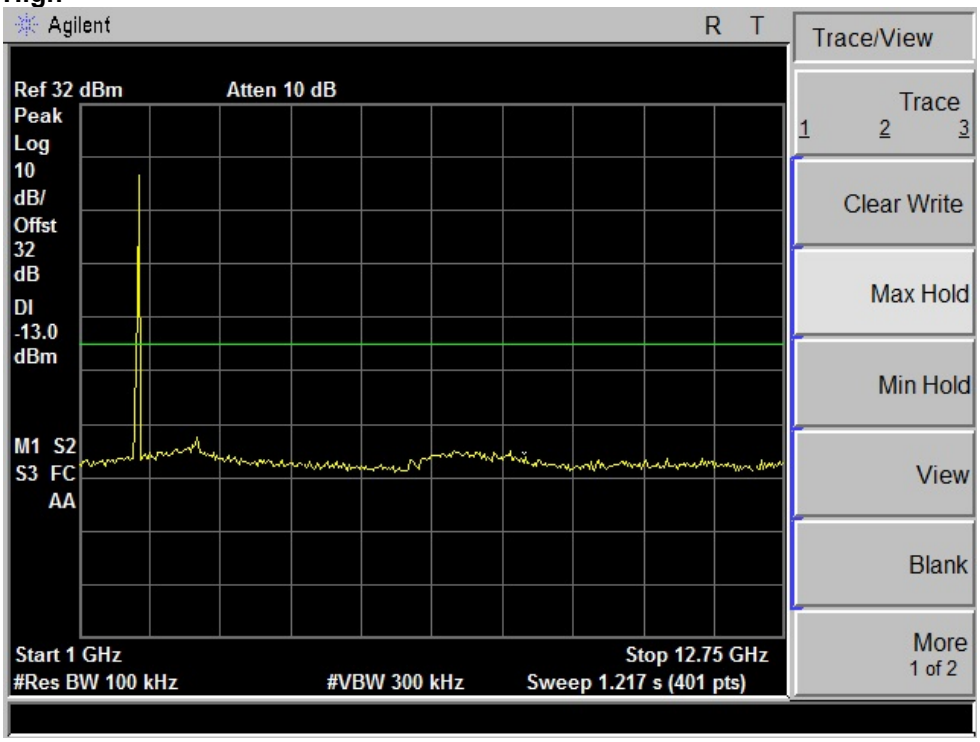
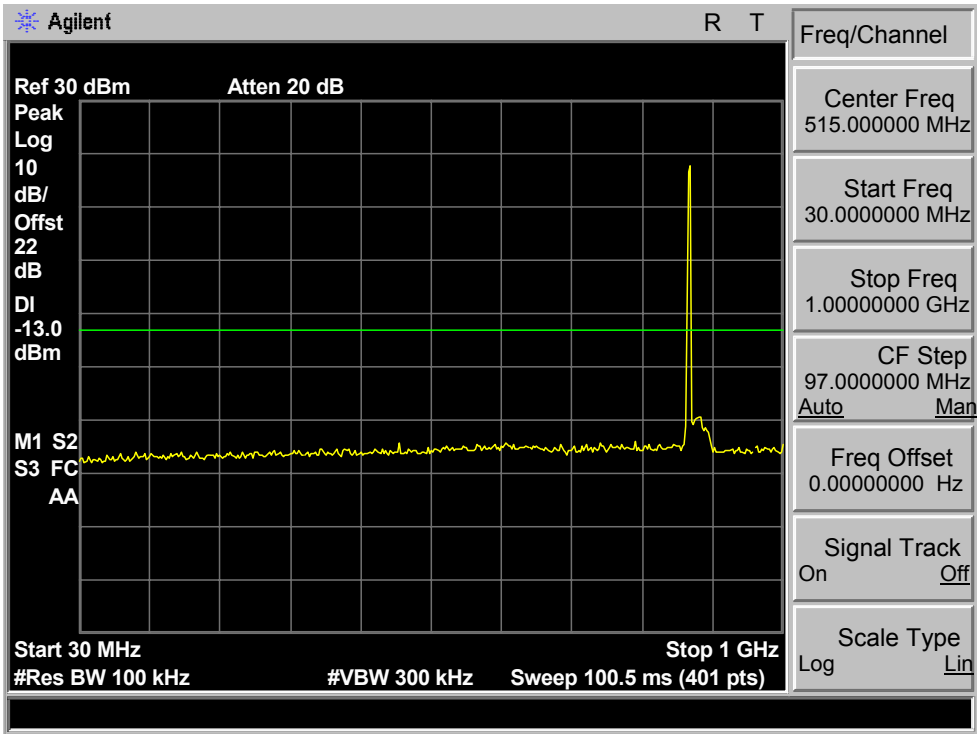

Agilent
R T
Trace/View
Ref 32 dBm
Atten 10 dB
Peak
Log
10
dB/
Offst
32
dB
Dl
-13.0
dBm
M1 S2
S3 FC
AA
Trace
1 2 3
Clear Write
Max Hold
Min Hold
View
Blank
More
1 of 2
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1 GHz
Sweep 100.5 ms (401 pts)

High

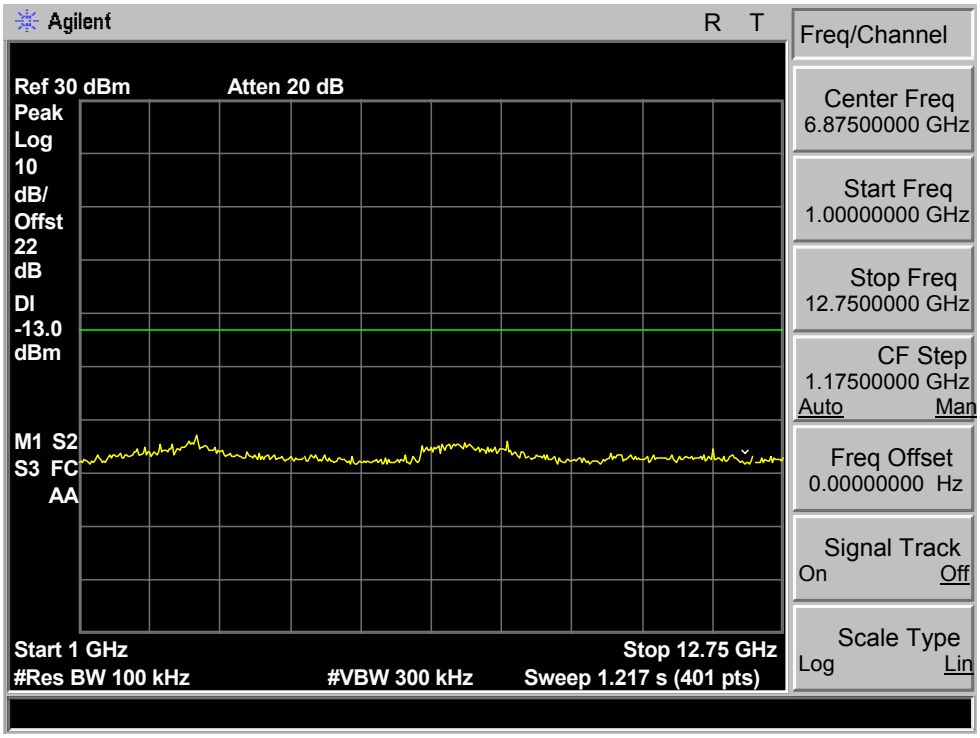

Agilent
R T
Trace/View
Ref 32 dBm
Atten 10 dB
Peak
Log
10
dB/
Offst
32
dB
Dl
-13.0
dBm
M1 S2
S3 FC
AA
Trace
1 2 3
Clear Write
Max Hold
Min Hold
View
Blank
More
1 of 2
Start 1 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 12.75 GHz
Sweep 1.217 s (401 pts)

Antenna Terminal Spurious Emission at CDMA 850

Low



Low



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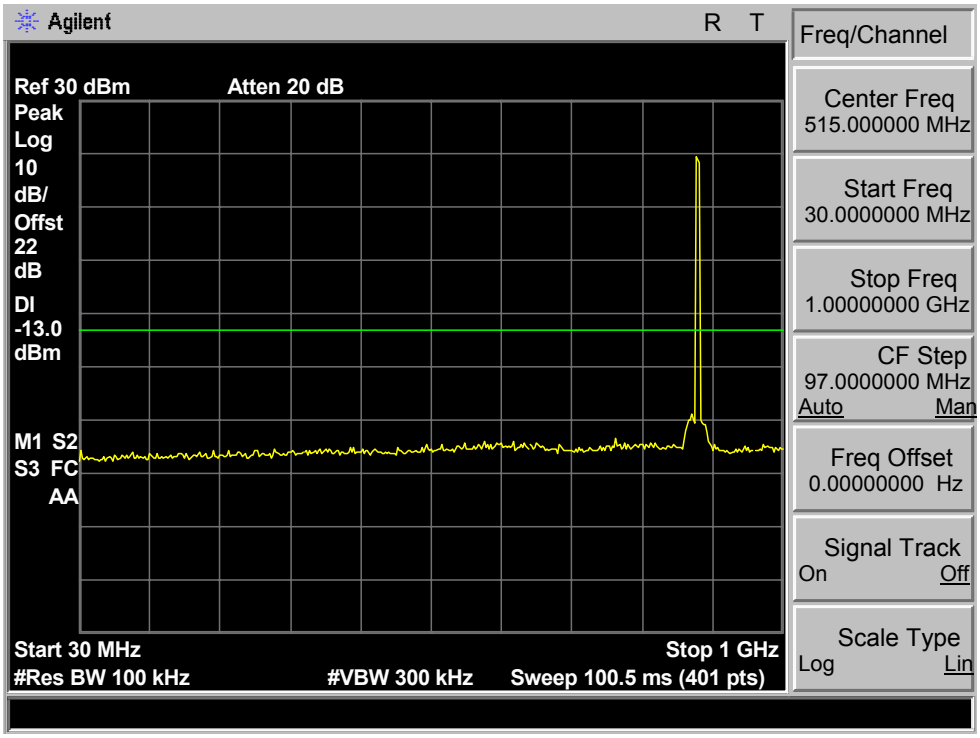

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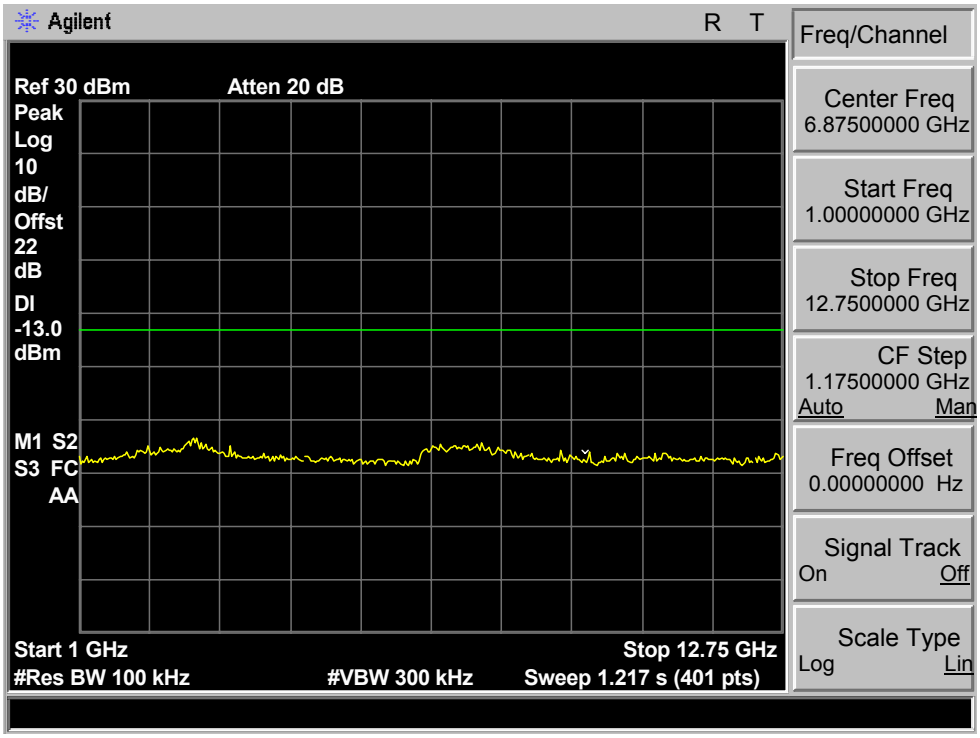

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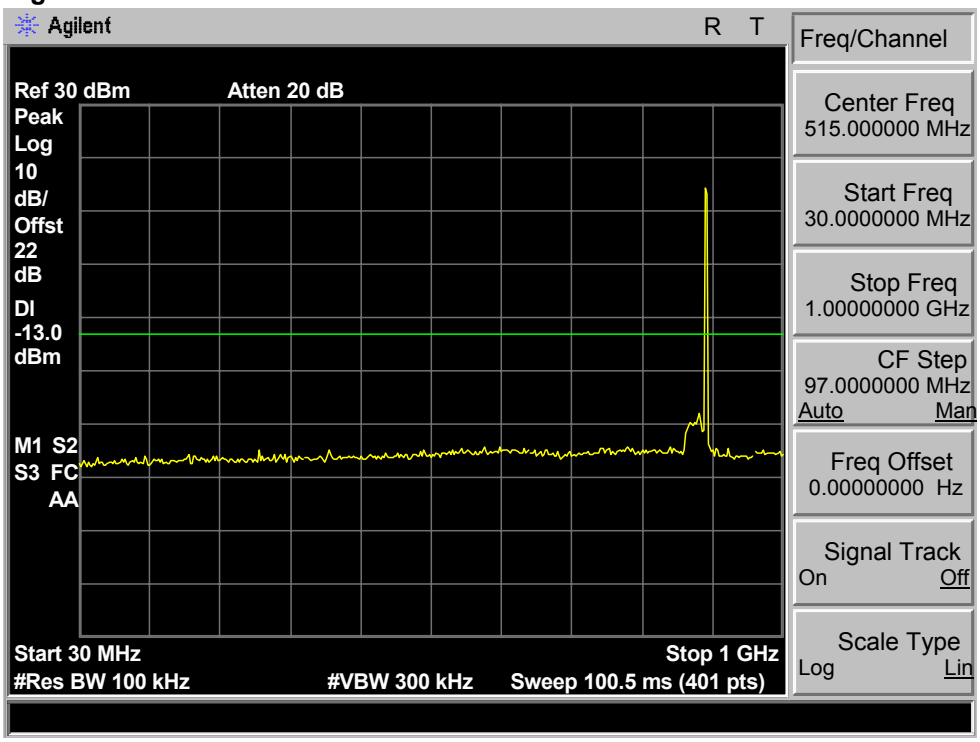
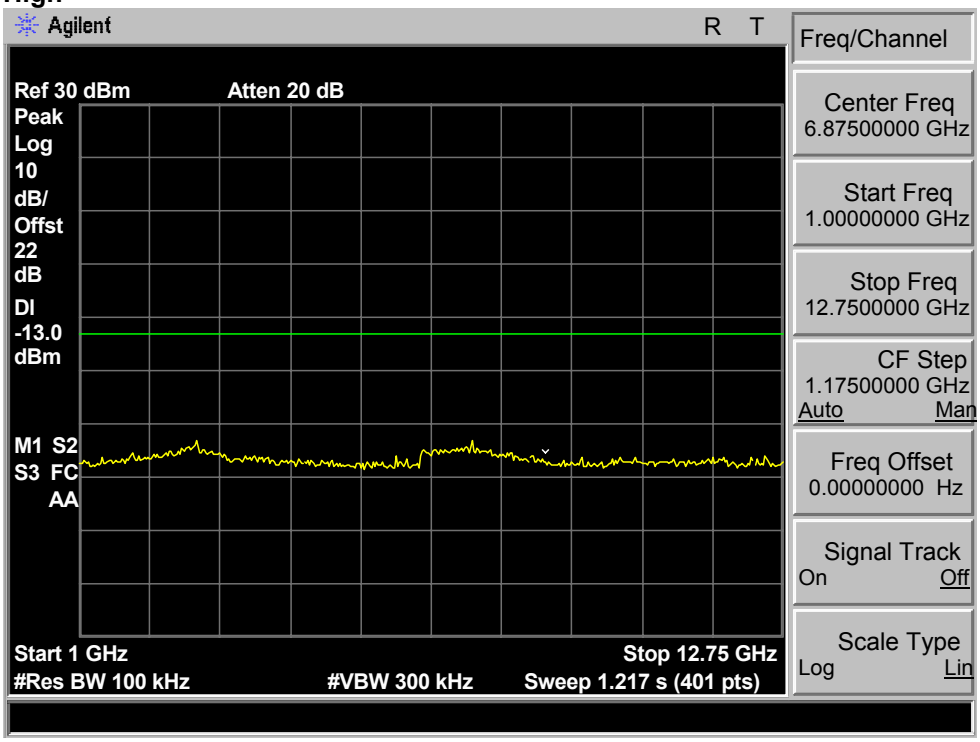

Agilent
R T
Ref 30 dBm
Atten 20 dB
Peak
Log
10
dB/
Offst
22
dB
Dl
-13.0
dBm
M1 S2
S3 FC
AA
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1 GHz
Sweep 100.5 ms (401 pts)
Freq/Channel
Center Freq
515.000000 MHz
Start Freq
30.0000000 MHz
Stop Freq
1.00000000 GHz
CF Step
97.0000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Scale Type
Log Lin

High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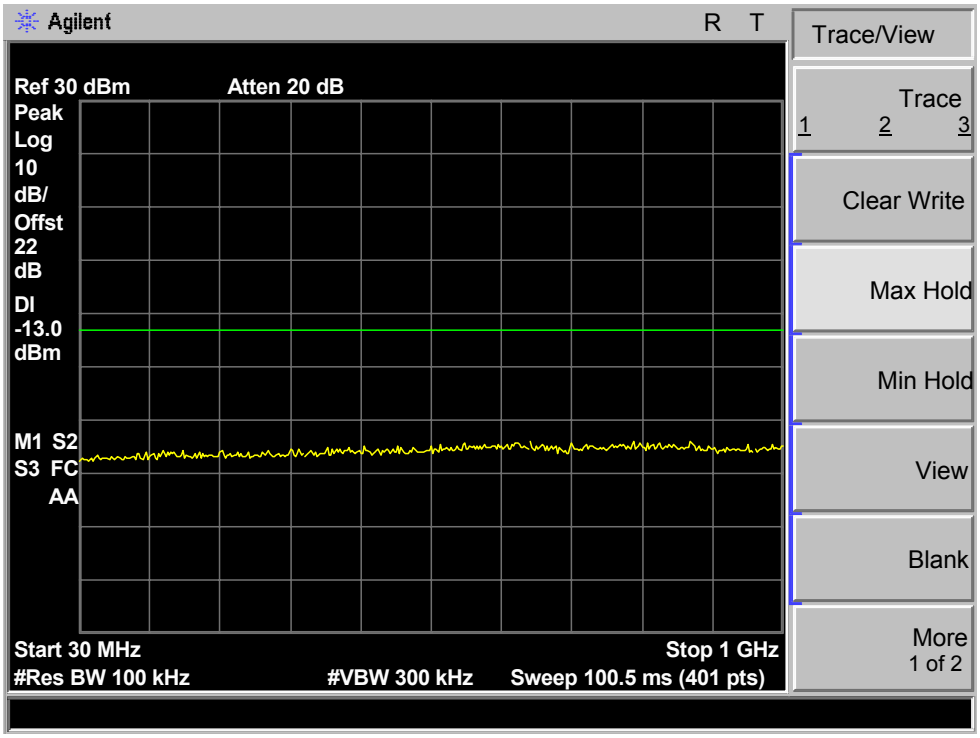
R T
Ref 30 dBm
Atten 20 dB
Peak
Log
10
dB/
Offst
22
dB
Dl
-13.0
dBm
M1 S2
S3 FC
AA
Start 1 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 12.75 GHz
Sweep 1.217 s (401 pts)
Freq/Channel
Center Freq
6.87500000 GHz
Start Freq
1.00000000 GHz
Stop Freq
12.7500000 GHz
CF Step
1.17500000 GHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Scale Type
Log Lin

Antenna Terminal Spurious Emission at CDMA 1900

Low



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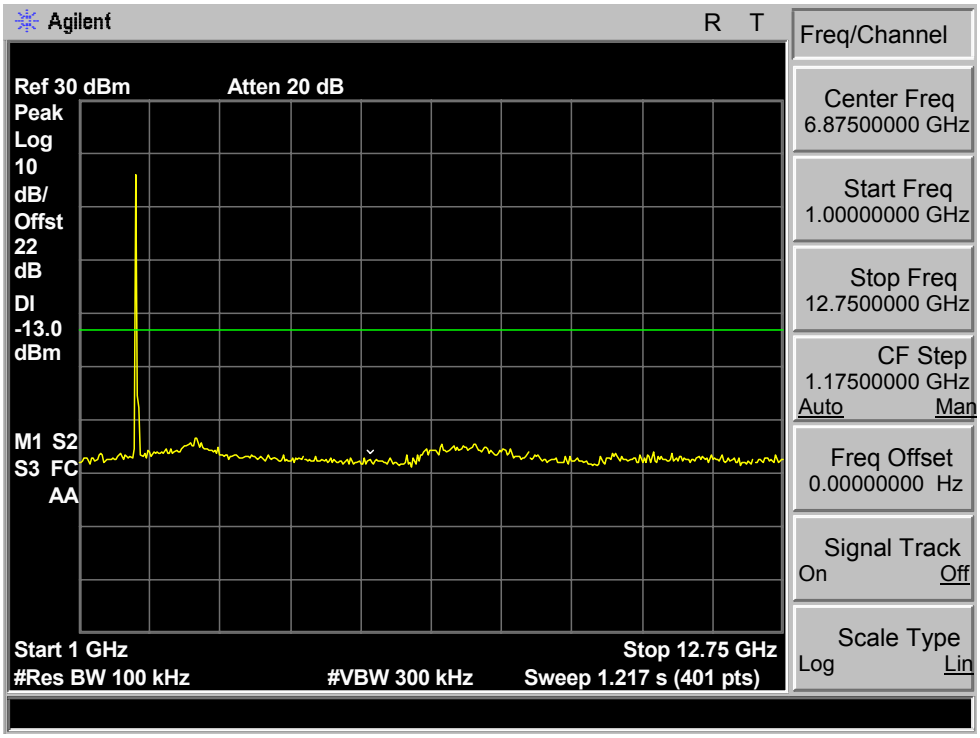

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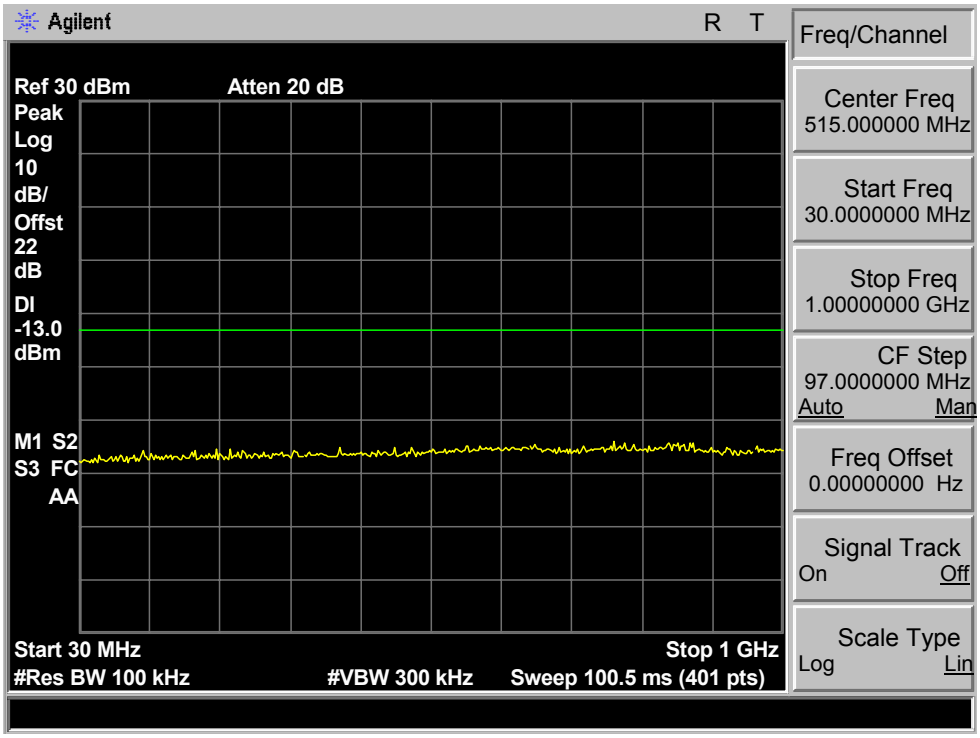
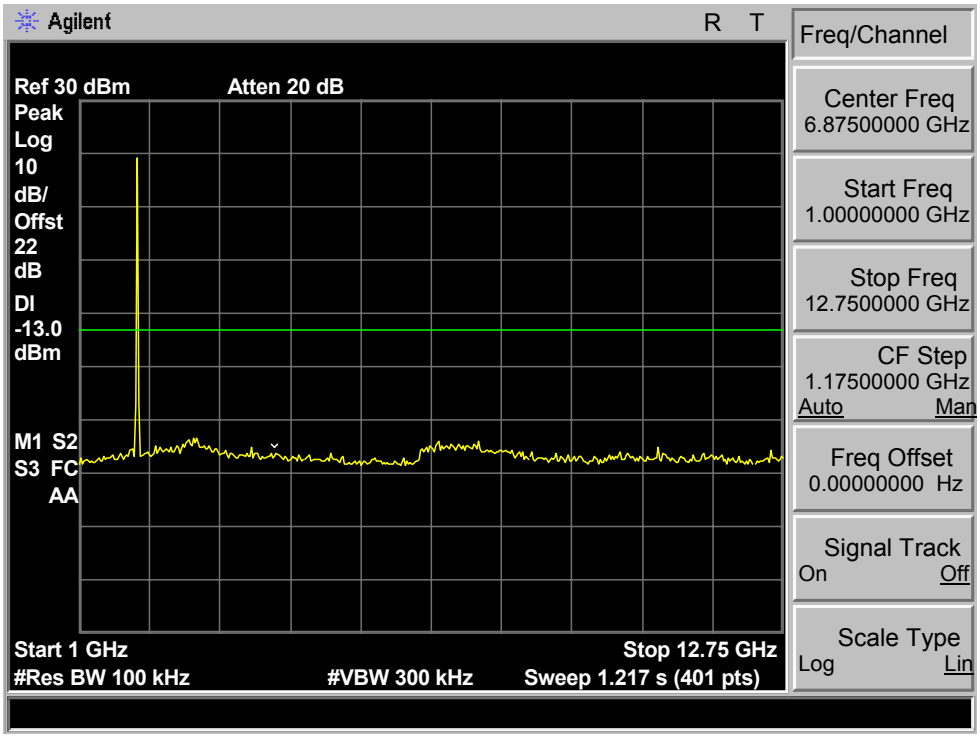


Middle



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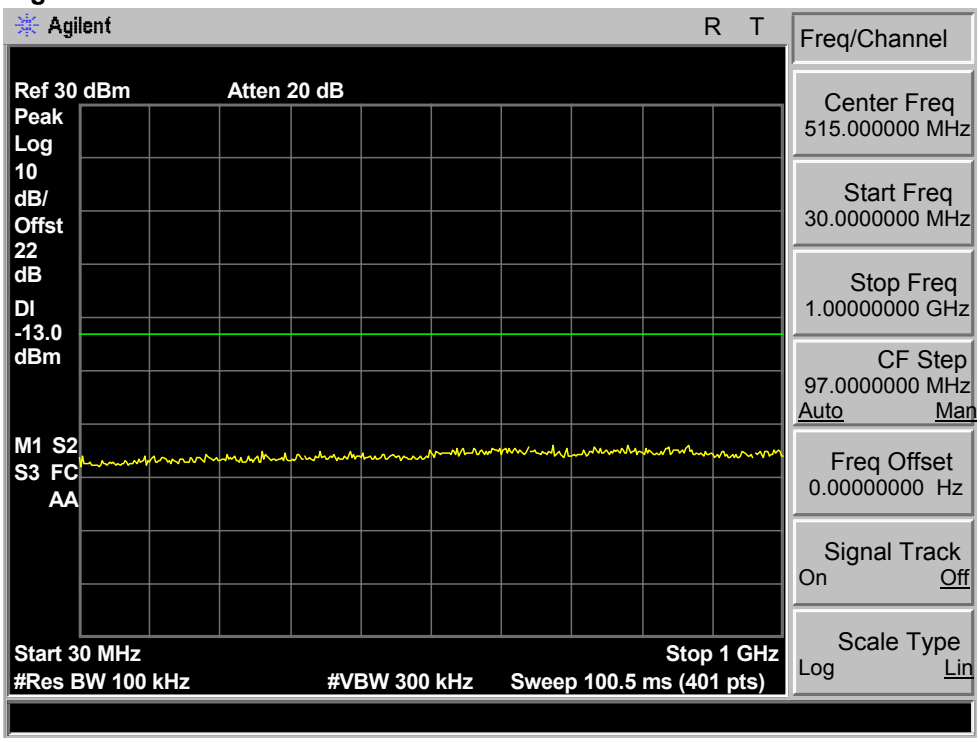
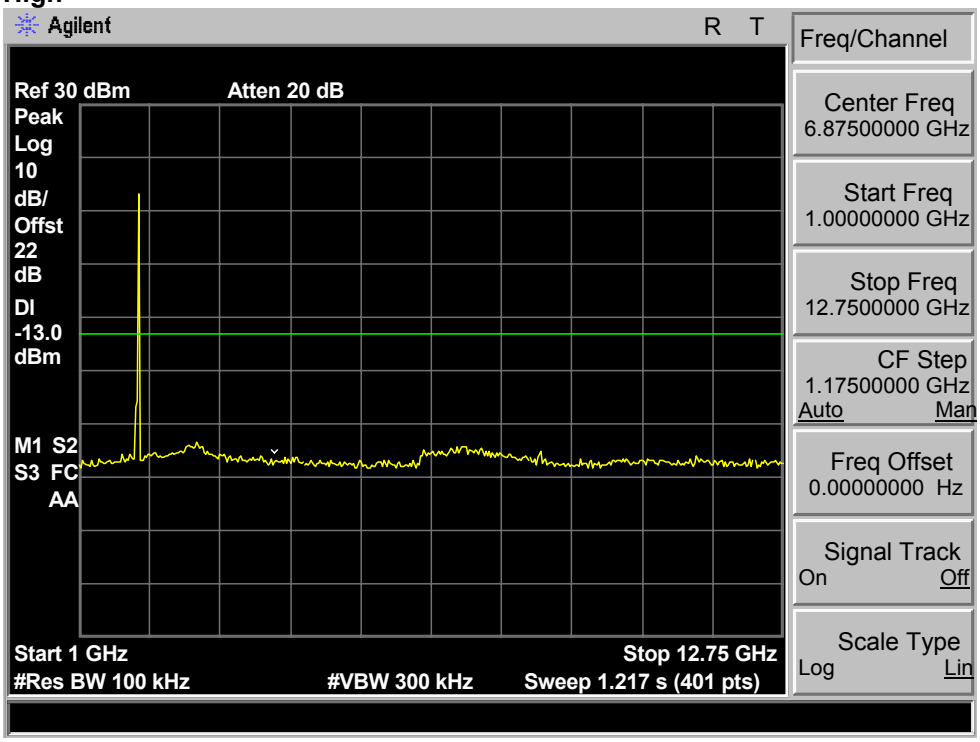
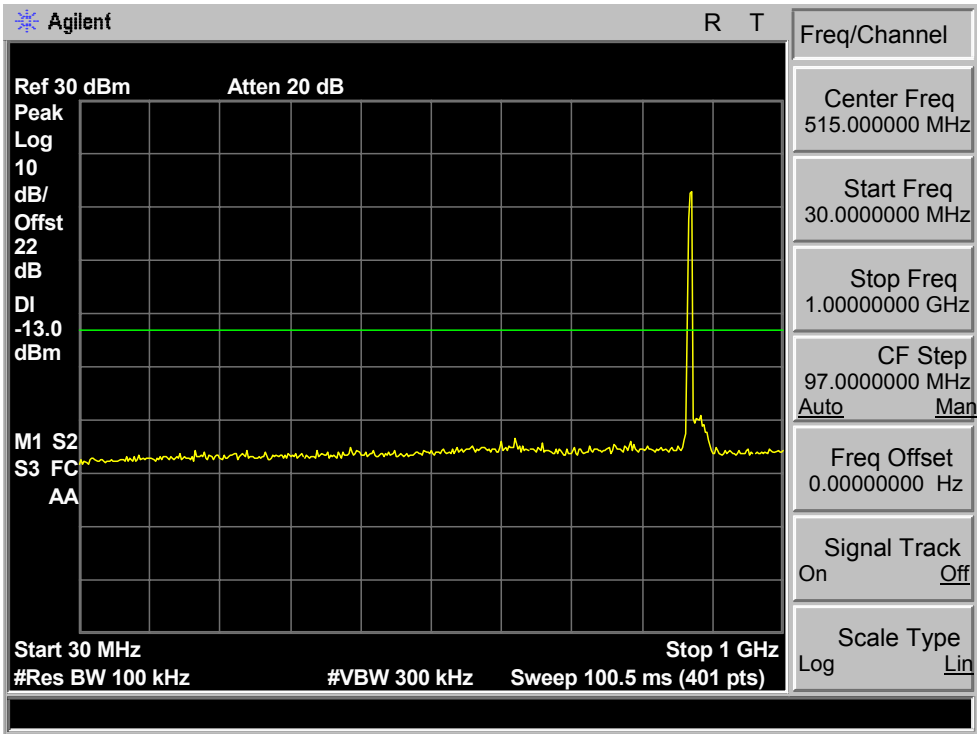

Agilent
R T
Ref 30 dBm
Atten 20 dB
Peak
Log
10
dB/
Offst
22
dB
Dl
-13.0
dBm
M1 S2
S3 FC
AA
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1 GHz
Sweep 100.5 ms (401 pts)
Freq/Channel
Center Freq
515.000000 MHz
Start Freq
30.0000000 MHz
Stop Freq
1.00000000 GHz
CF Step
97.0000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Scale Type
Log Lin

High

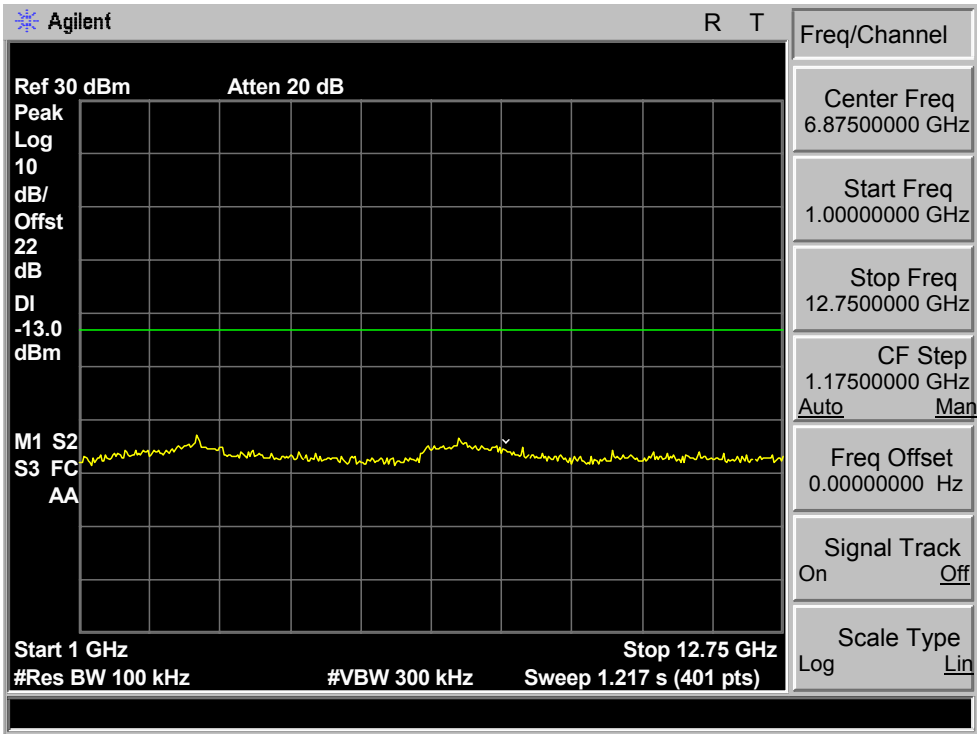

Agilent
R T
Ref 30 dBm
Atten 20 dB
Peak
Log
10
dB/
Offst
22
dB
Dl
-13.0
dBm
M1 S2
S3 FC
AA
Start 1 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 12.75 GHz
Sweep 1.217 s (401 pts)
Freq/Channel
Center Freq
6.87500000 GHz
Start Freq
1.00000000 GHz
Stop Freq
12.7500000 GHz
CF Step
1.17500000 GHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Scale Type
Log Lin

Antenna Terminal Spurious Emission at WCDMA 850

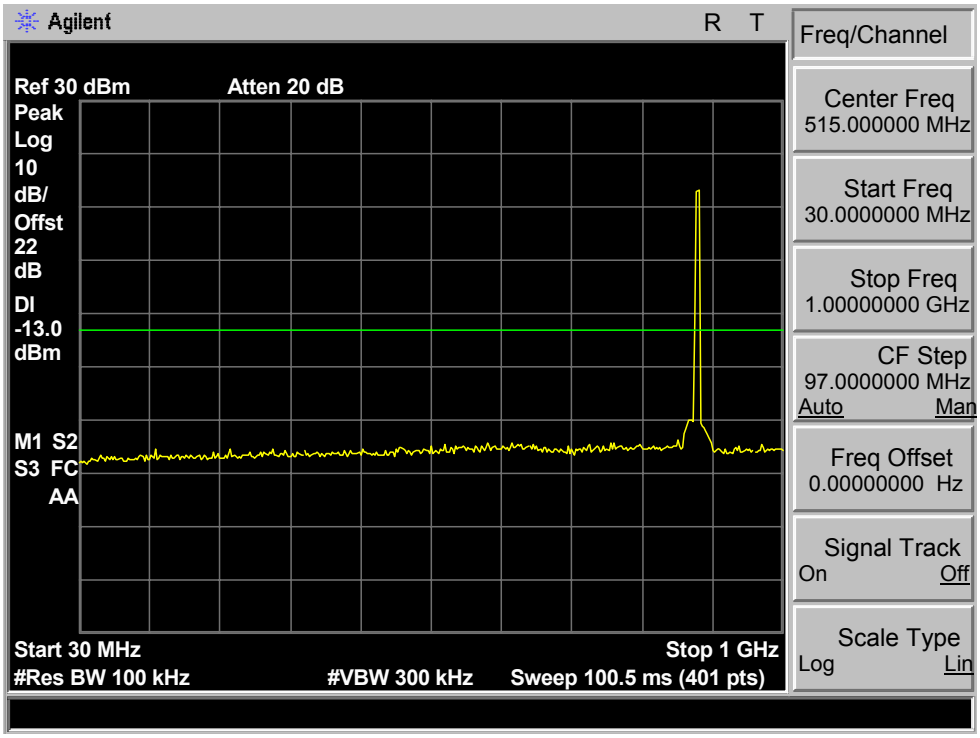
Low



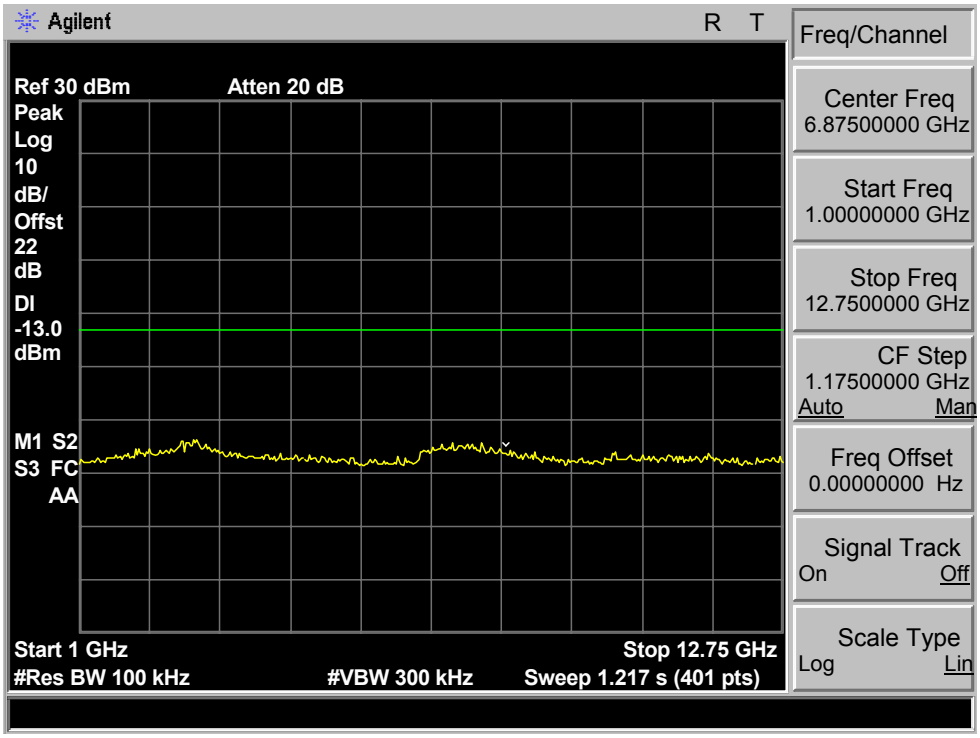
Low



Middle



Middle



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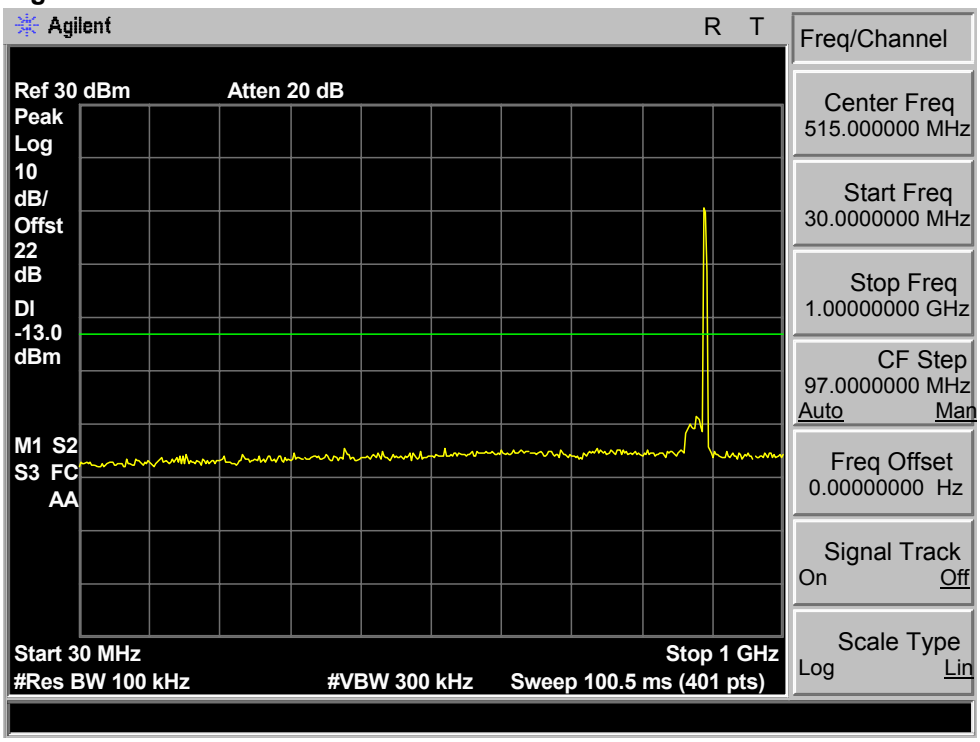
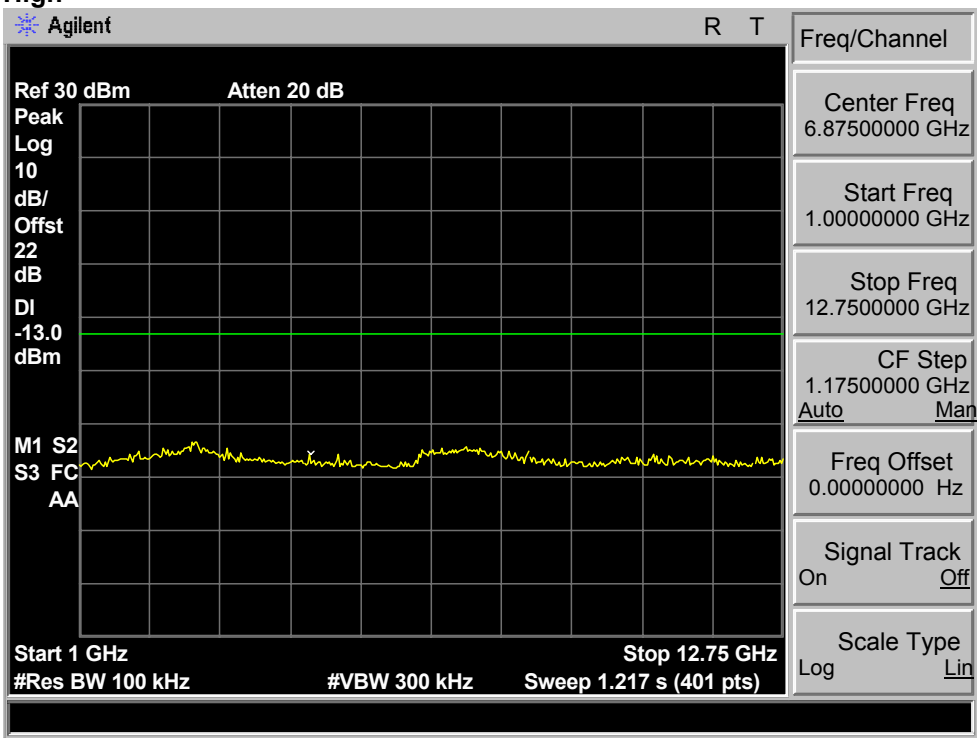
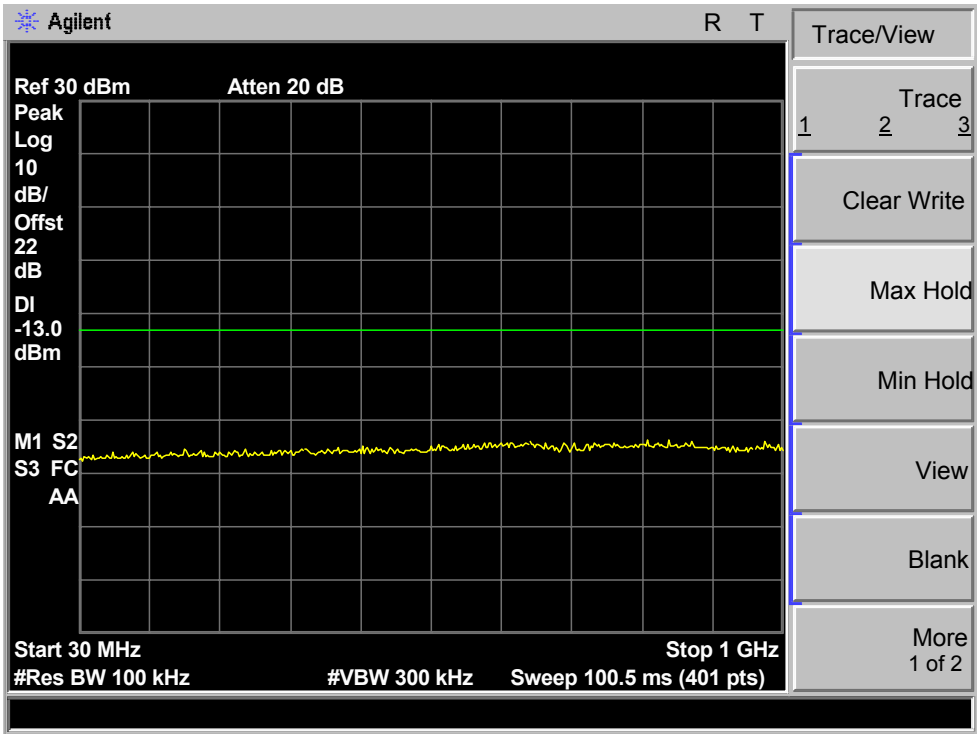

Agilent
R T
Ref 30 dBm
Atten 20 dB
Peak
Log
10
dB/
Offst
22
dB
Dl
-13.0
dBm
M1 S2
S3 FC
AA
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1 GHz
Sweep 100.5 ms (401 pts)
Freq/Channel
Center Freq
515.000000 MHz
Start Freq
30.0000000 MHz
Stop Freq
1.00000000 GHz
CF Step
97.0000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Scale Type
Log Lin

High

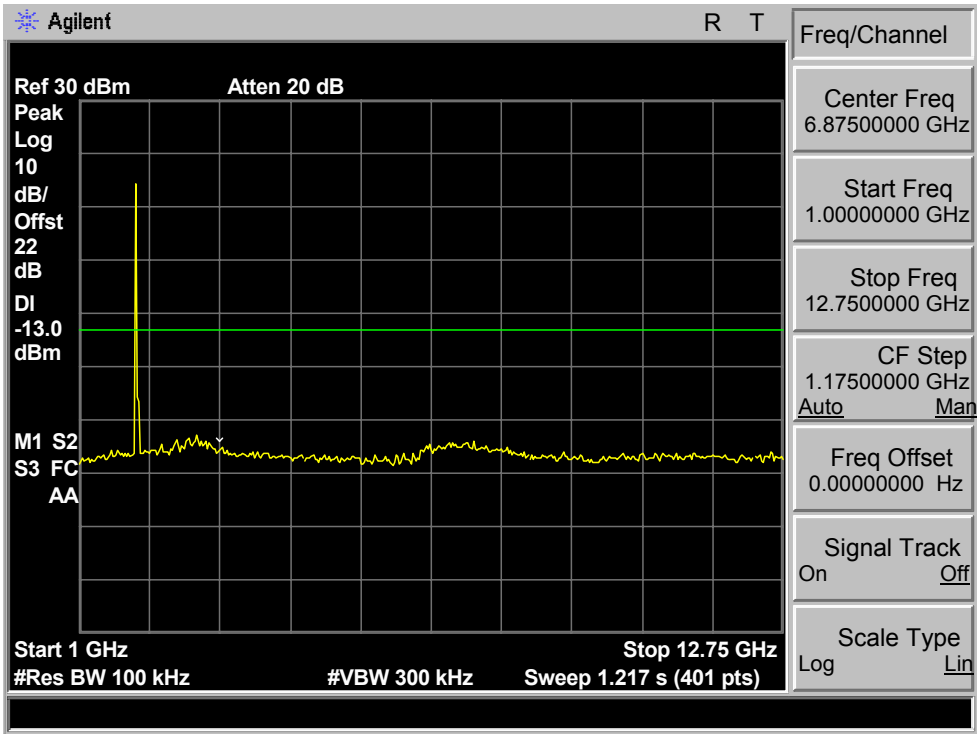

Agilent
R T
Ref 30 dBm
Atten 20 dB
Peak
Log
10
dB/
Offst
22
dB
Dl
-13.0
dBm
M1 S2
S3 FC
AA
Start 1 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 12.75 GHz
Sweep 1.217 s (401 pts)
Freq/Channel
Center Freq
6.87500000 GHz
Start Freq
1.00000000 GHz
Stop Freq
12.7500000 GHz
CF Step
1.17500000 GHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Scale Type
Log Lin

Antenna Terminal Spurious Emission at CDMA 1900

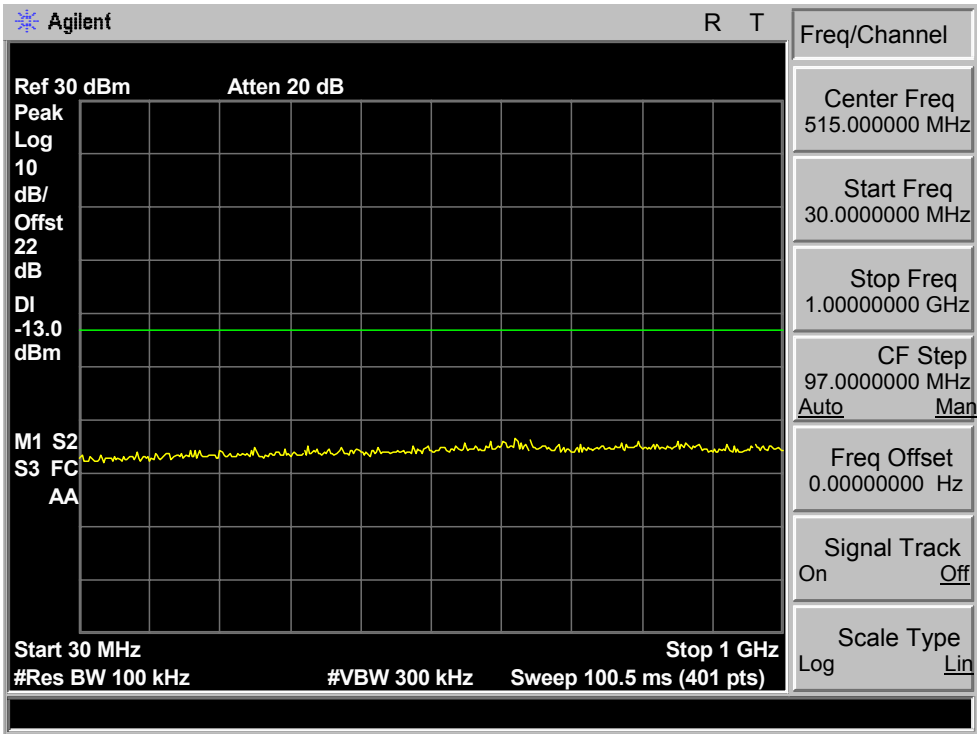
Low



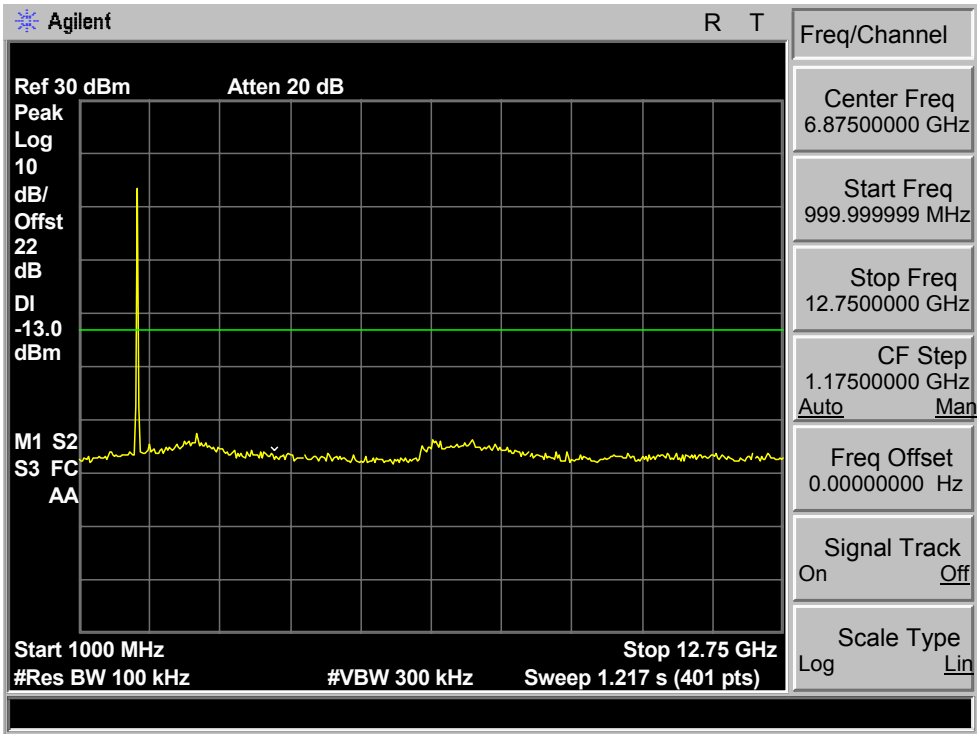
Low



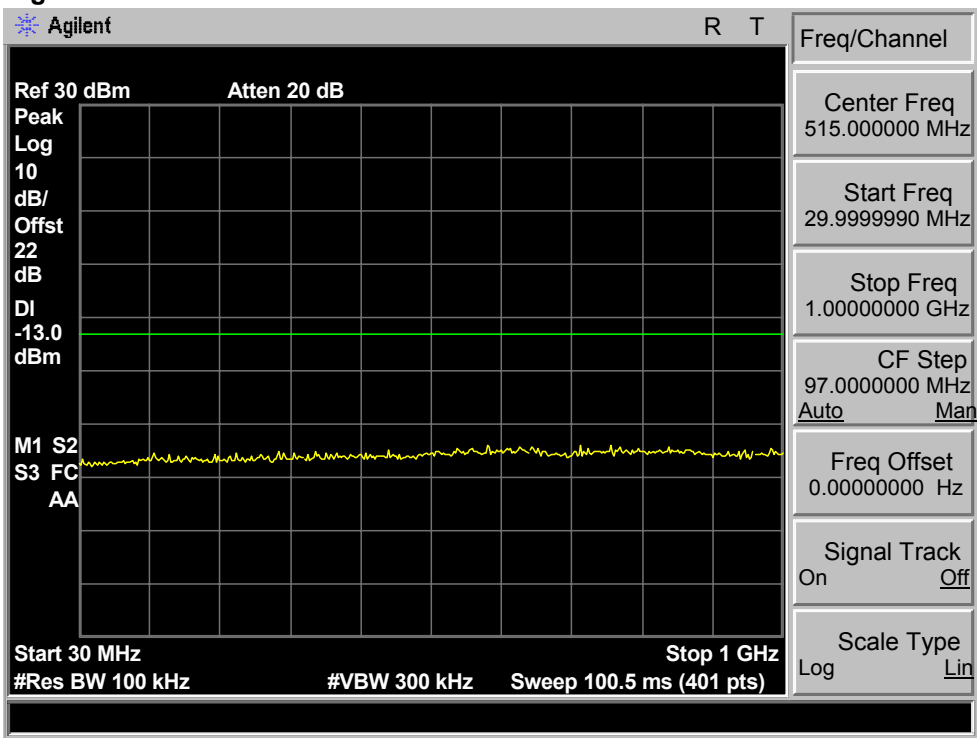
Middle



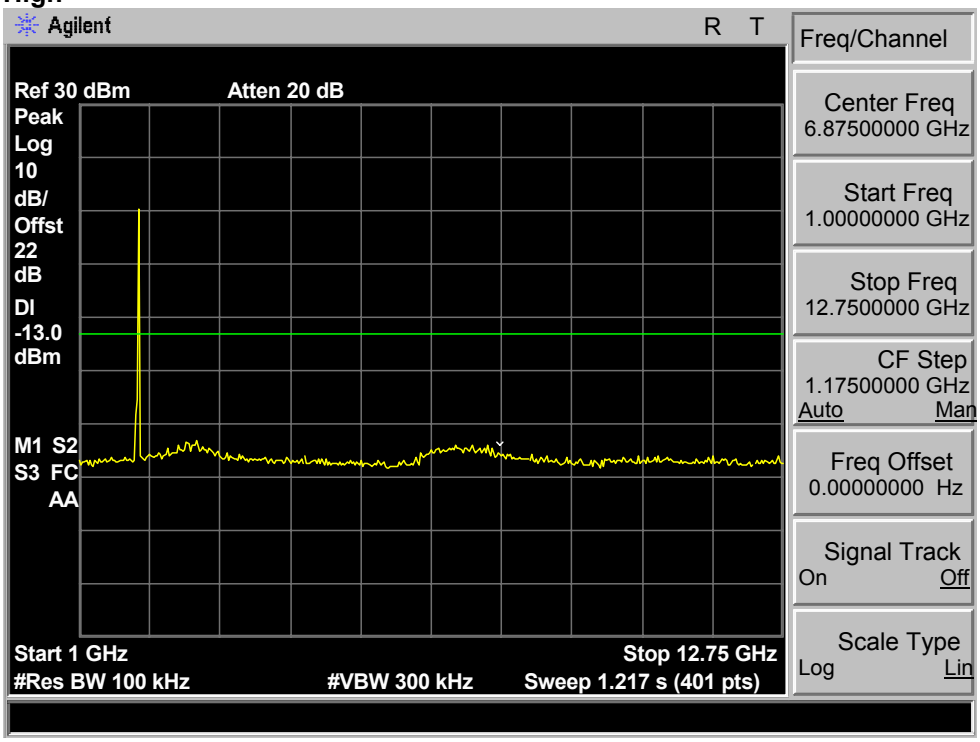
Middle



High

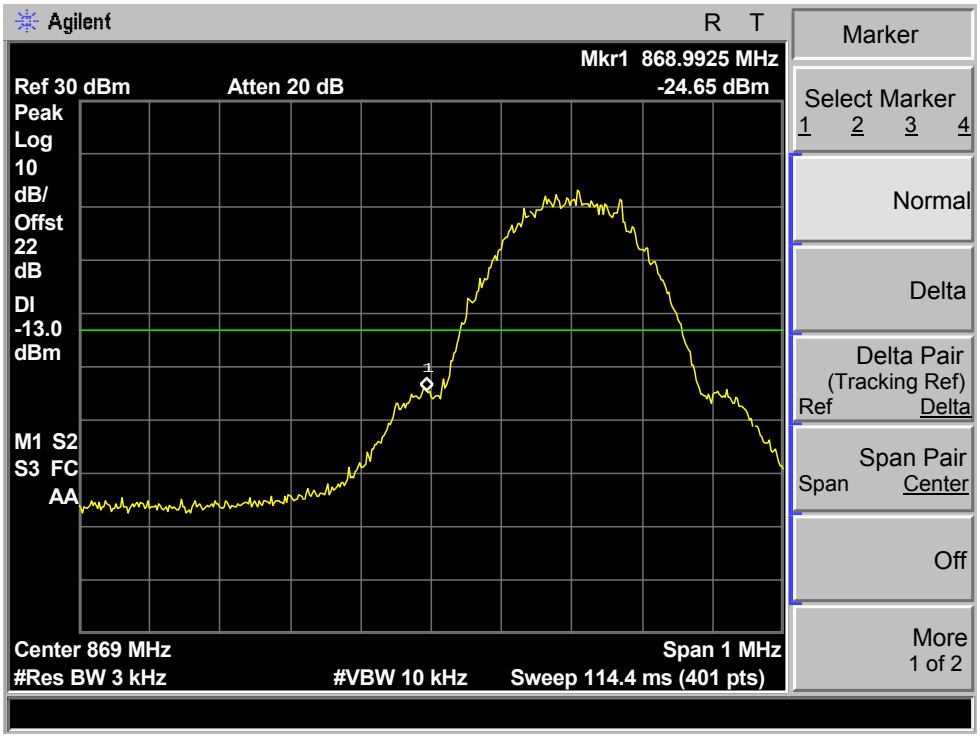

Agilent
R T
Ref 30 dBm
Atten 20 dB
Peak
Log
10
dB/
Offst
22
dB
Dl
-13.0
dBm
M1 S2
S3 FC
AA
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1 GHz
Sweep 100.5 ms (401 pts)
Freq/Channel
Center Freq
515.000000 MHz
Start Freq
29.9999990 MHz
Stop Freq
1.00000000 GHz
CF Step
97.0000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Scale Type
Log Lin

High


Agilent
R T
Ref 30 dBm
Atten 20 dB
Peak
Log
10
dB/
Offst
22
dB
Dl
-13.0
dBm
M1 S2
S3 FC
AA
Start 1 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 12.75 GHz
Sweep 1.217 s (401 pts)
Freq/Channel
Center Freq
6.87500000 GHz
Start Freq
1.00000000 GHz
Stop Freq
12.7500000 GHz
CF Step
1.17500000 GHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Scale Type
Log Lin

Band Edge Emission at GSM 850

Low



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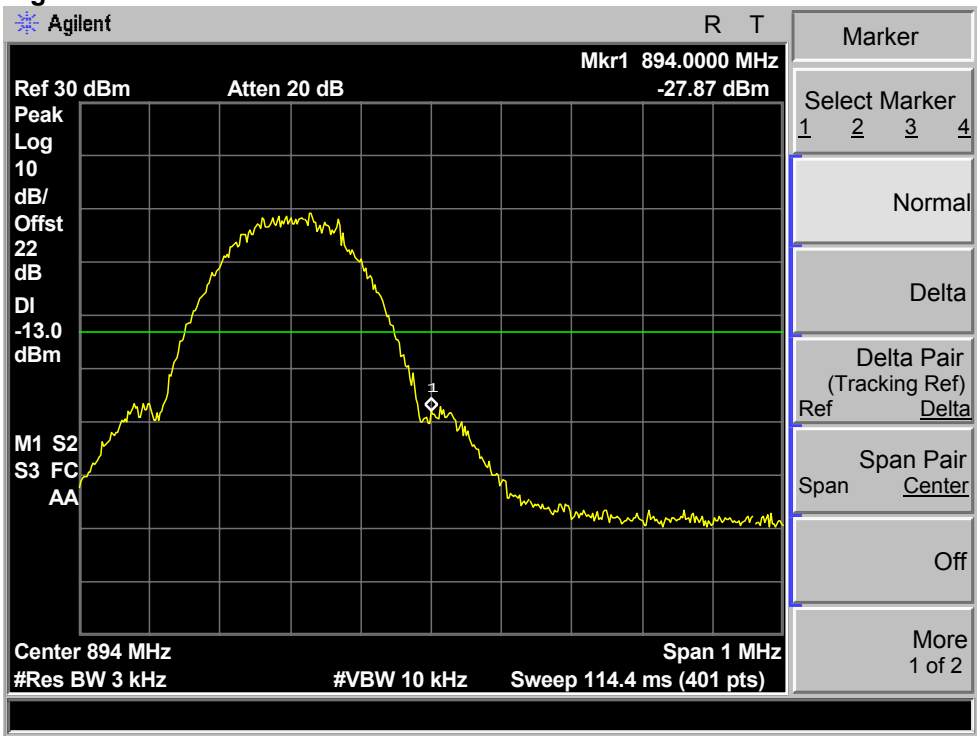
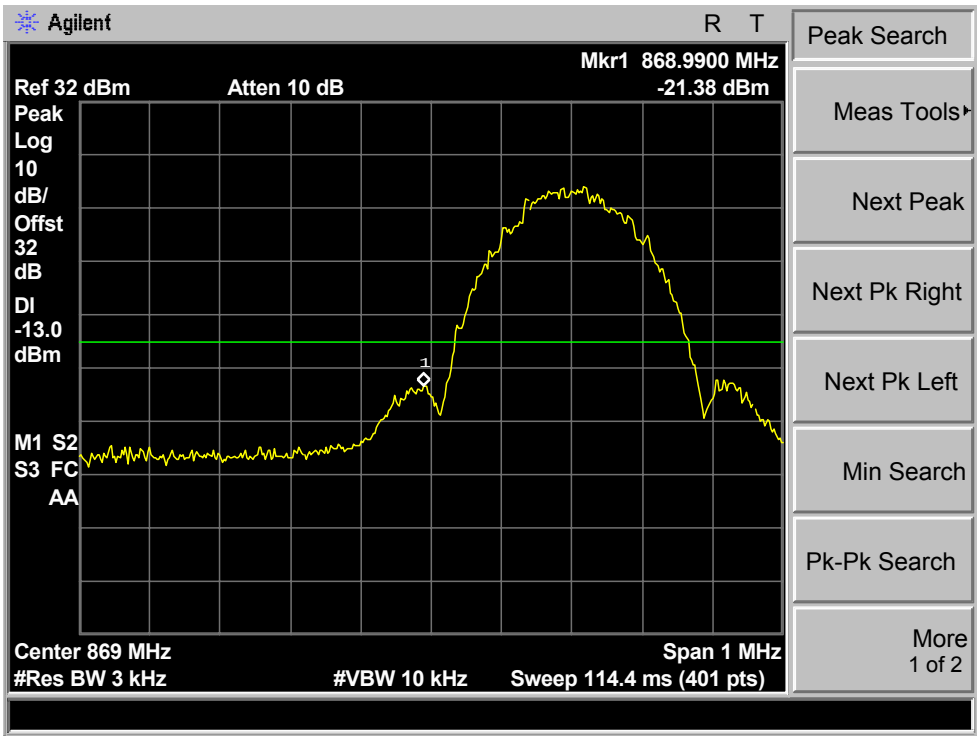
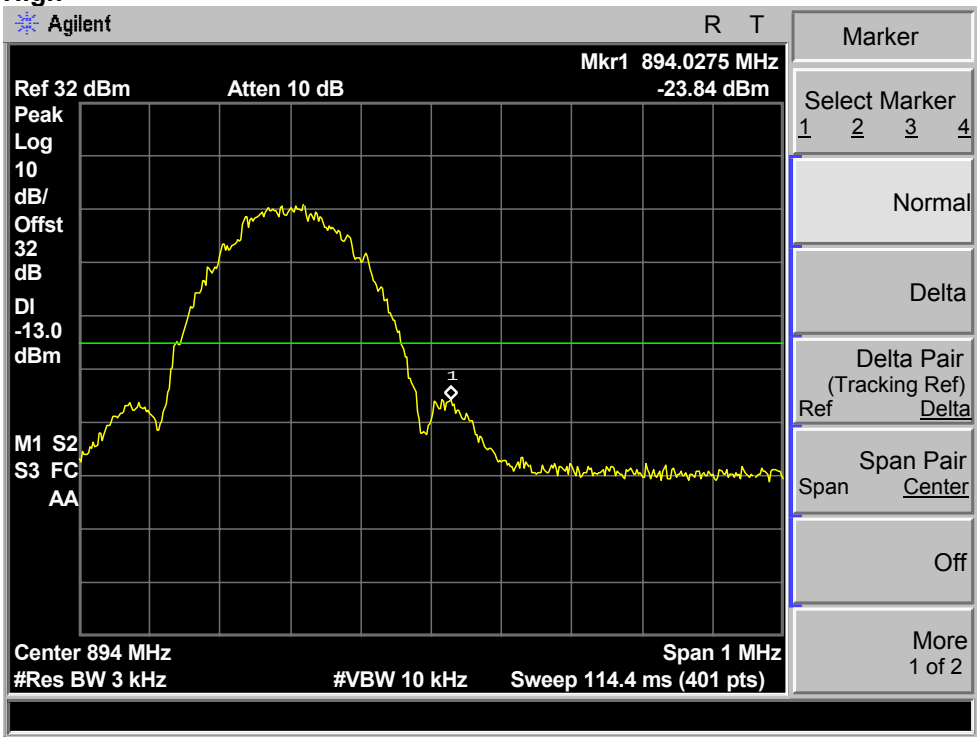


Band Edge Emission at GSM 850 (EDGE)

Low

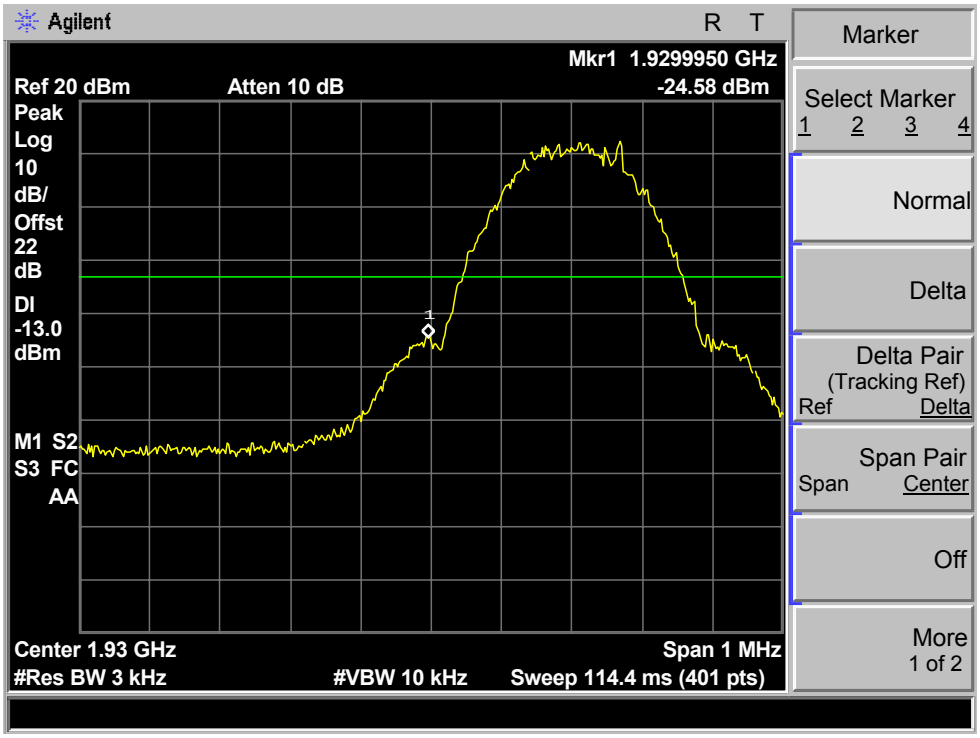


High



Band Edge Emission at GSM 1900

Low



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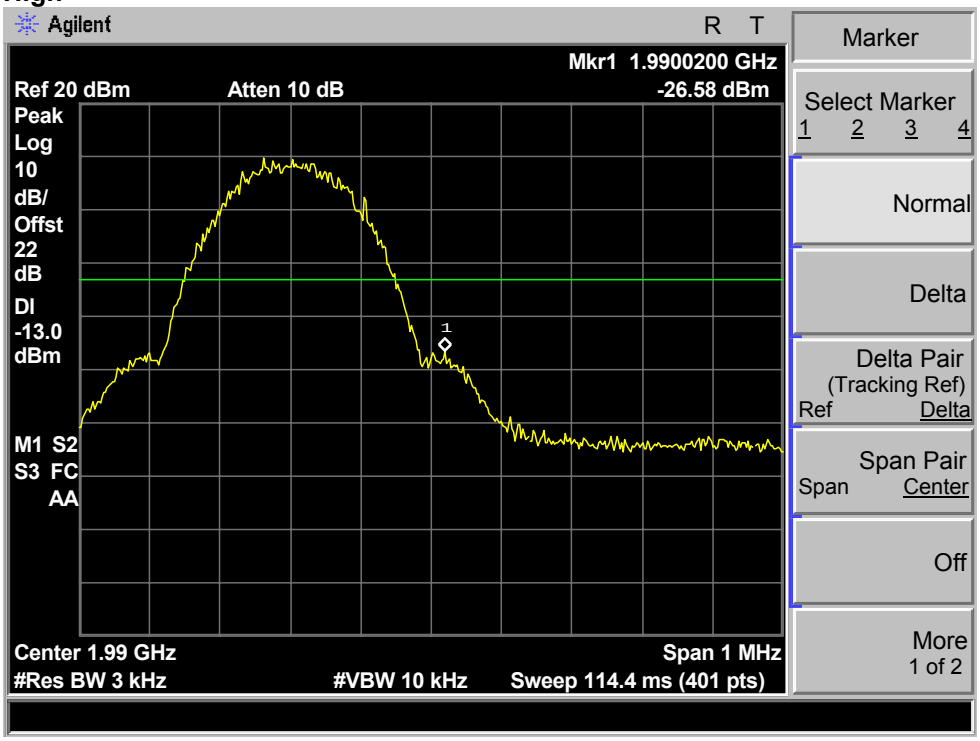
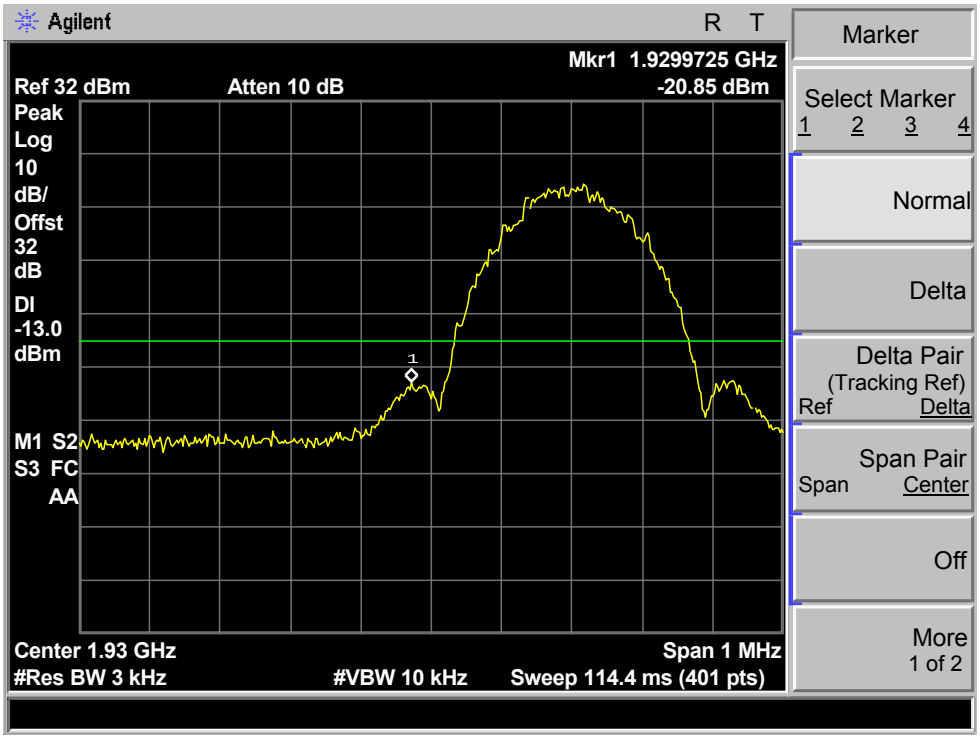


Band Edge Emission at GSM 1900 (EDGE)

Low



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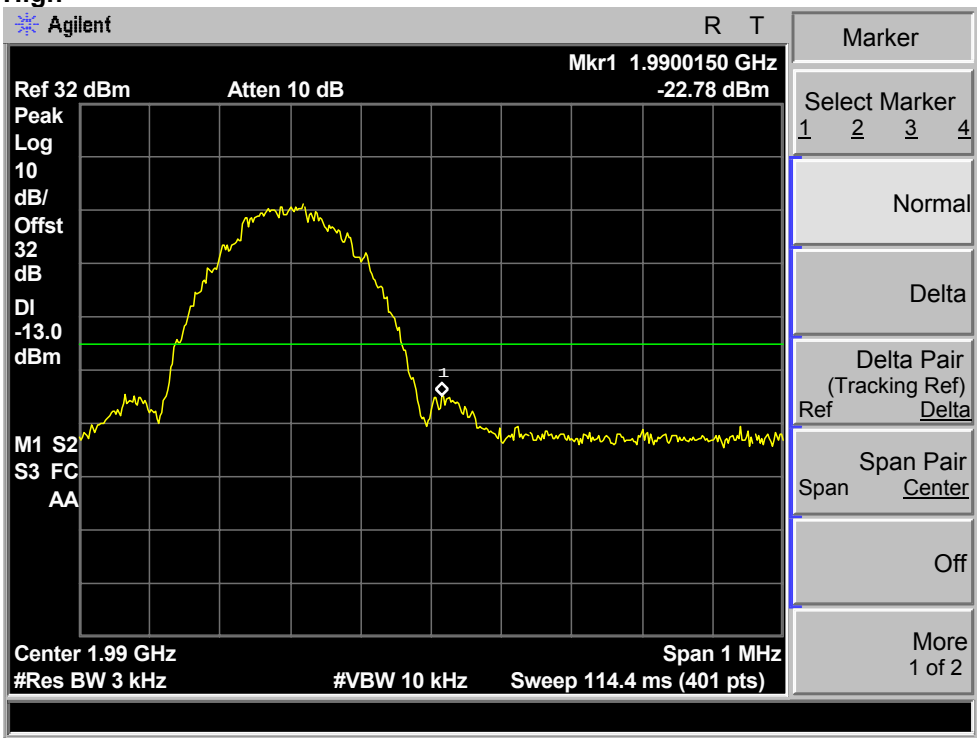
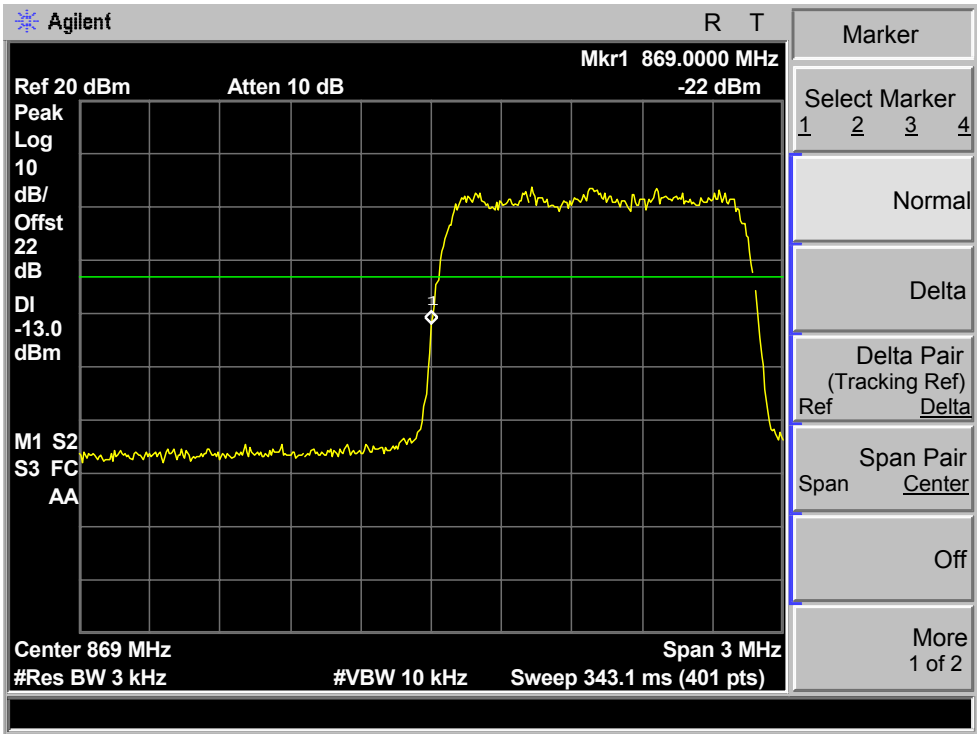


Band Edge Emission at CDMA 850

Low



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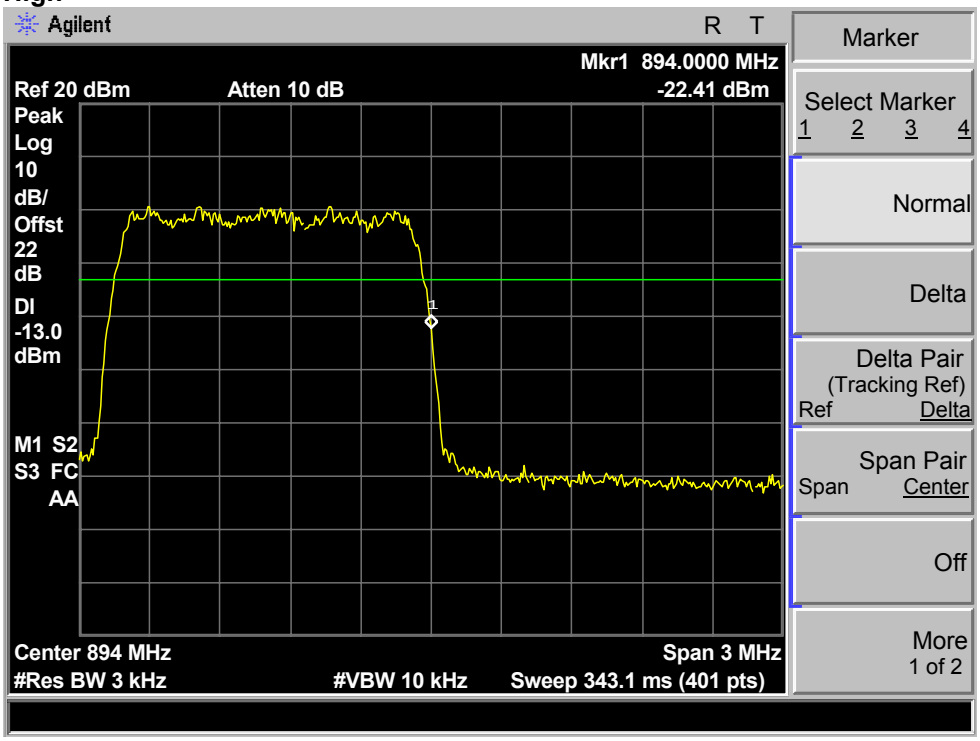
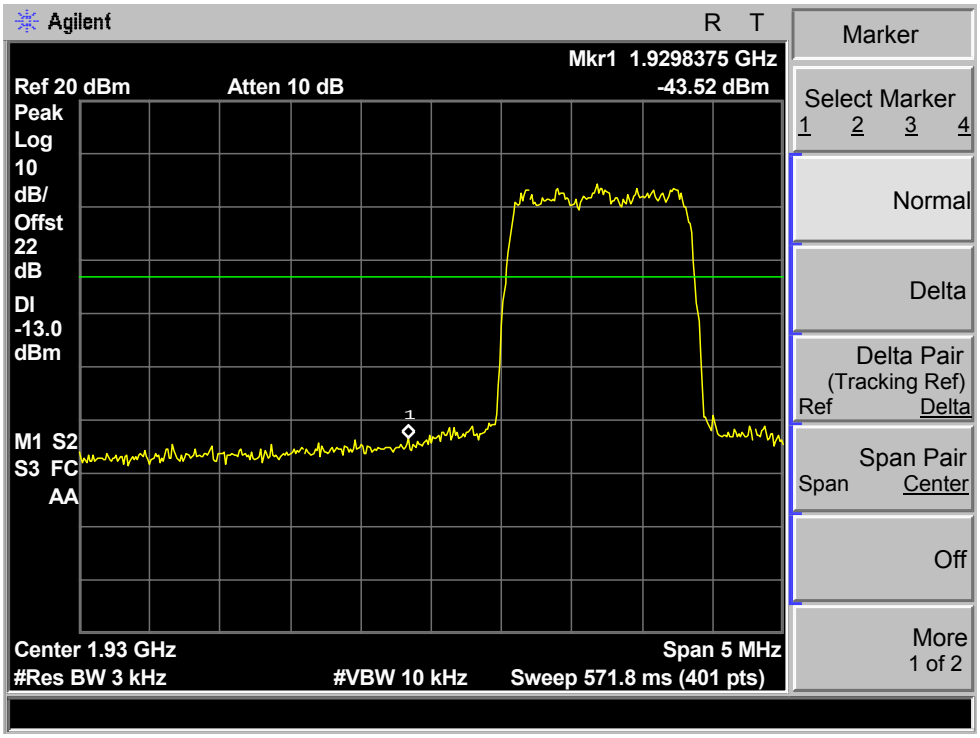
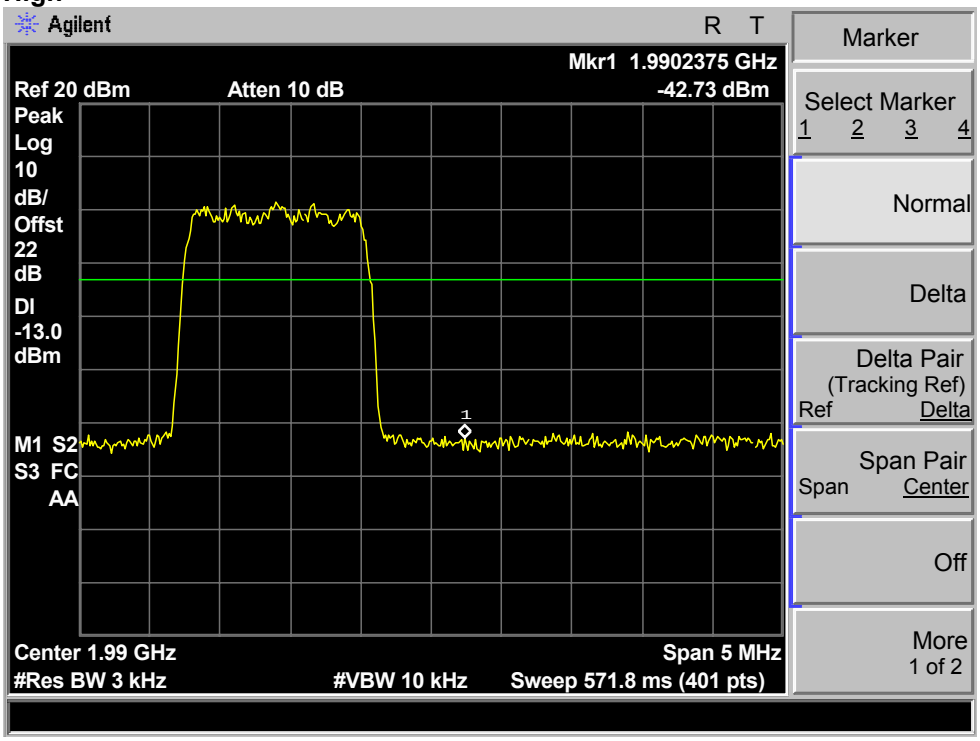


Band Edge Emission at CDMA 1900

Low

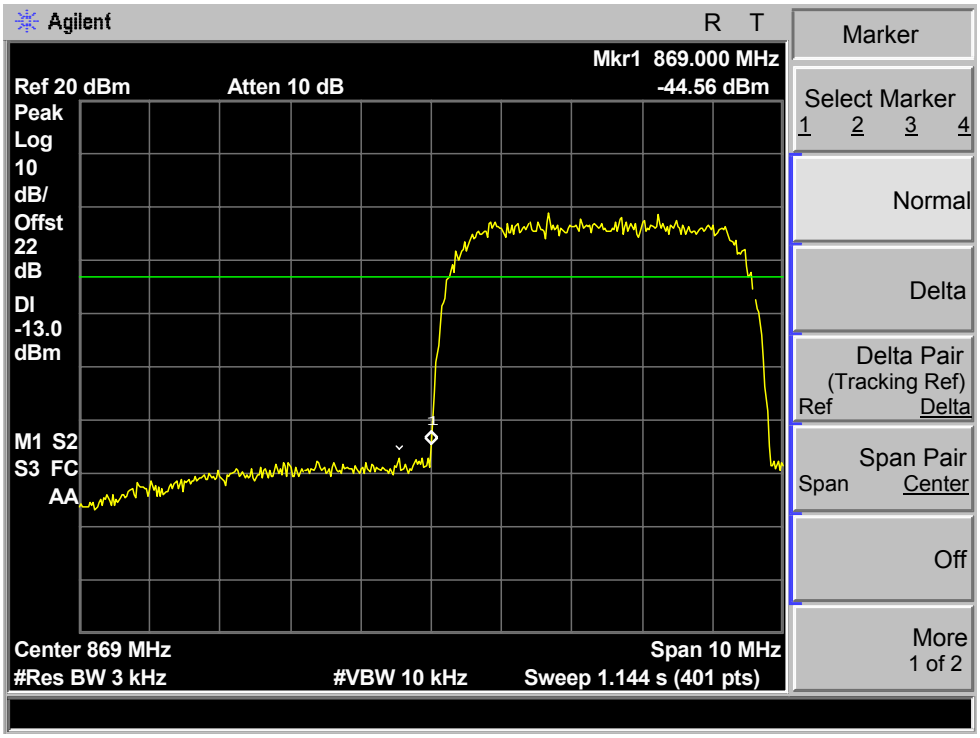


High



Band Edge Emission at WCDMA 850

Low



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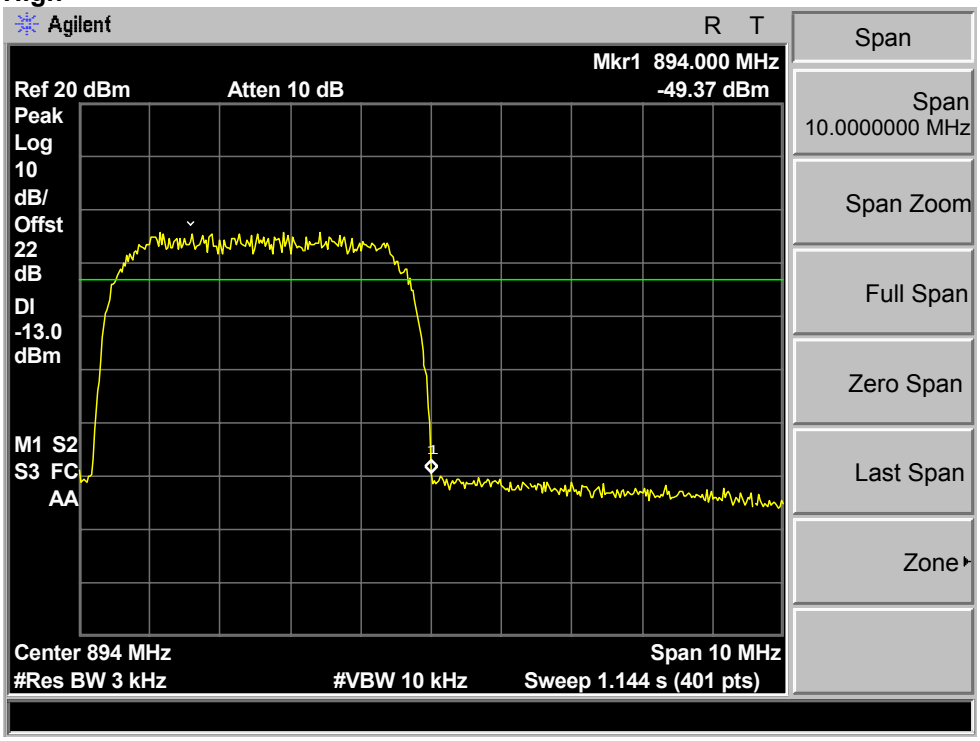
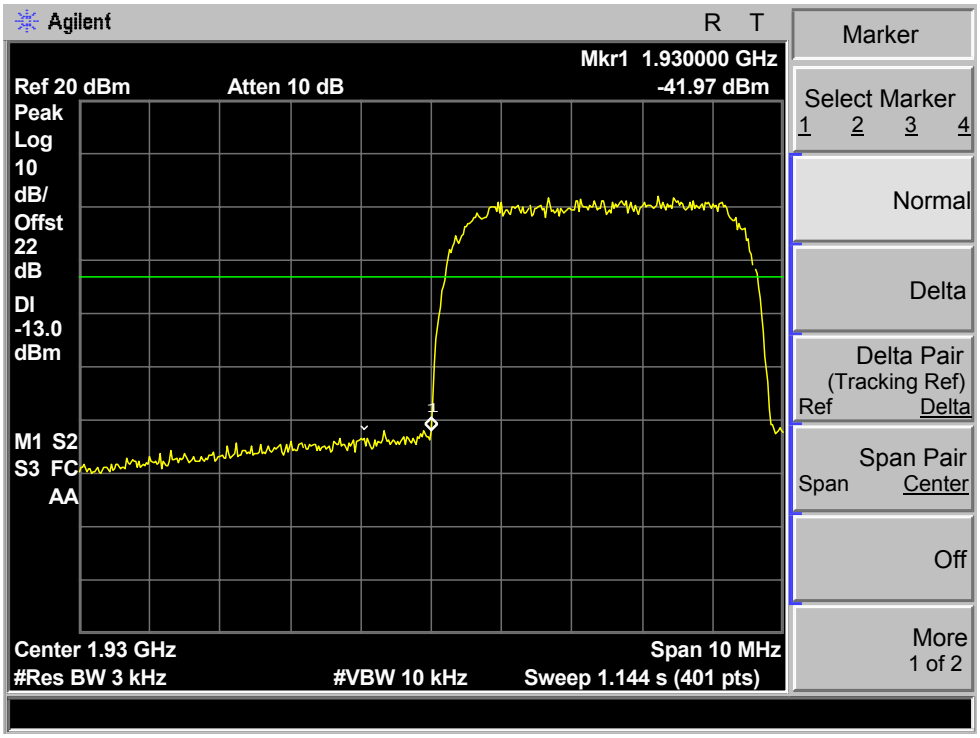


Band Edge Emission at WCDMA 1900

Low



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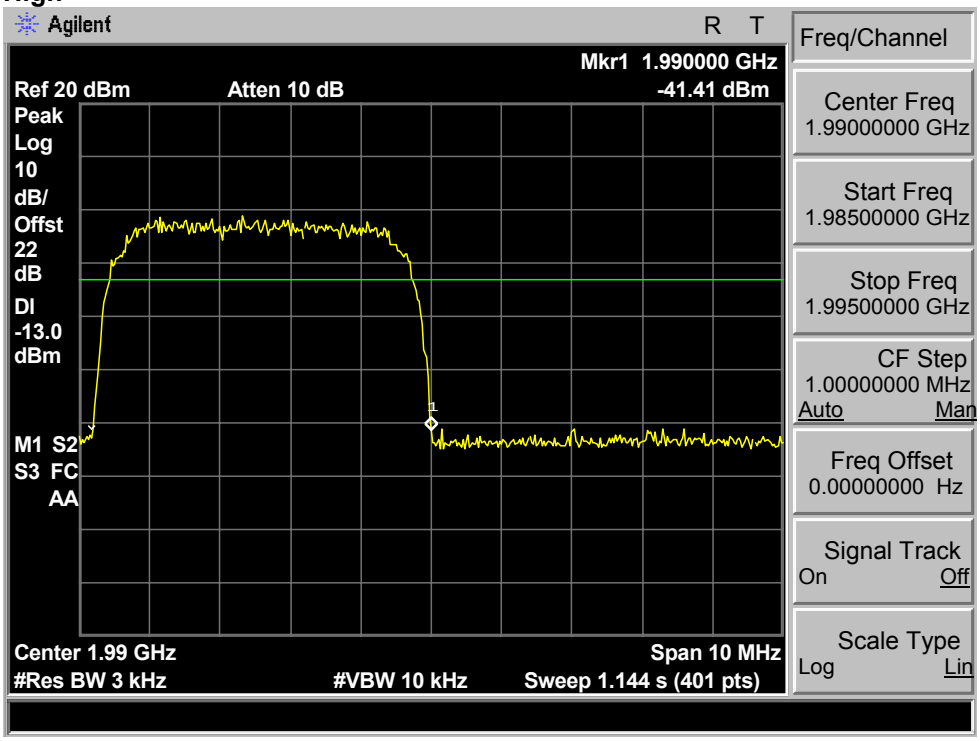


3.2.4 Inter-Modulation

1) Requirement

The power of any emission shall be attenuated below the transmitter power (P) by at least 43 +10 log (P) dB. The limit of emission equal to –13dBm.

3) Test Procedure

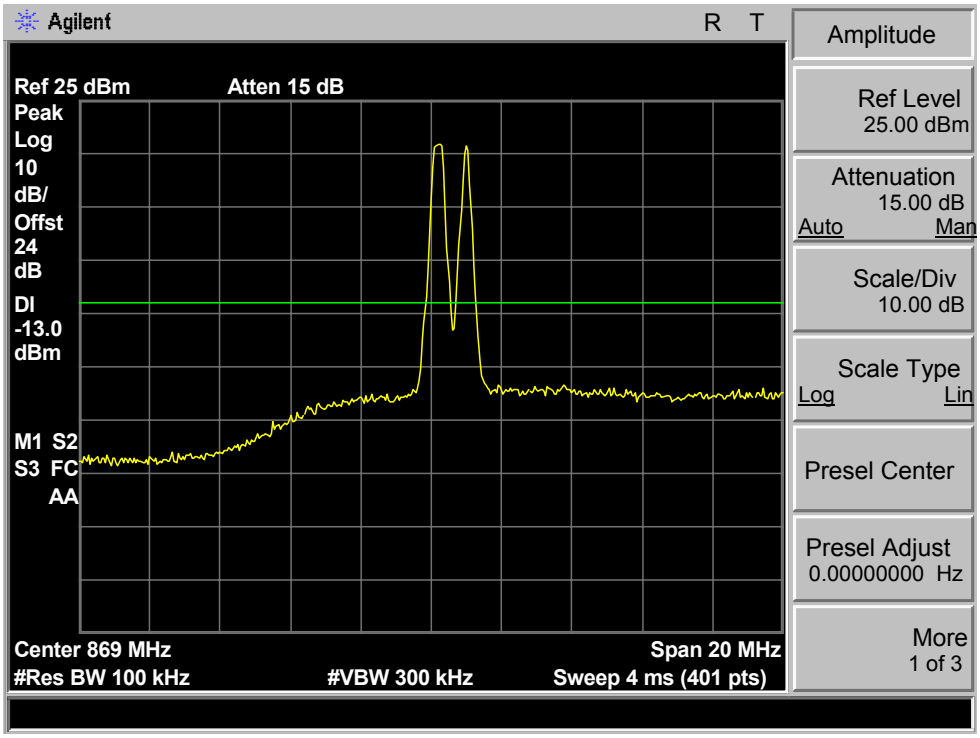
Two RF signals set as inputs. The frequencies of both RF signals shall be within the repeater's operating band. The spacing between both RF signals shall be the minimum possible spacing applied in a network. The level of both RF input signals shall be increased, until the maximum rated output power per channel, as declared by the manufacturer, is reached.

4) Test Result : complies

Refer to the following graphs.

GSM 850

Low



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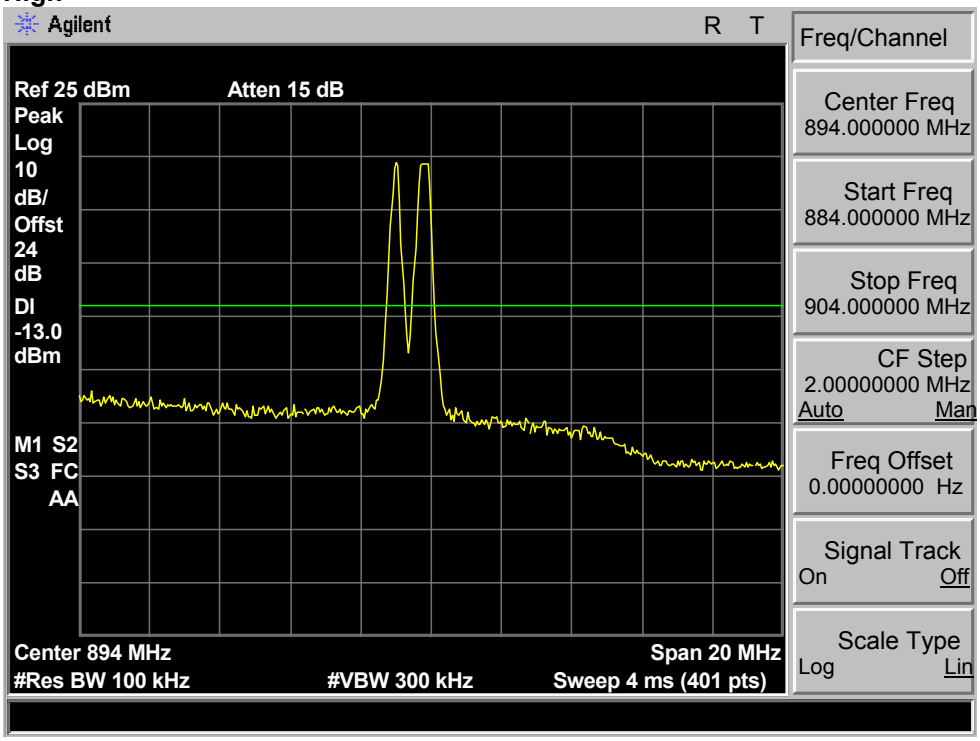
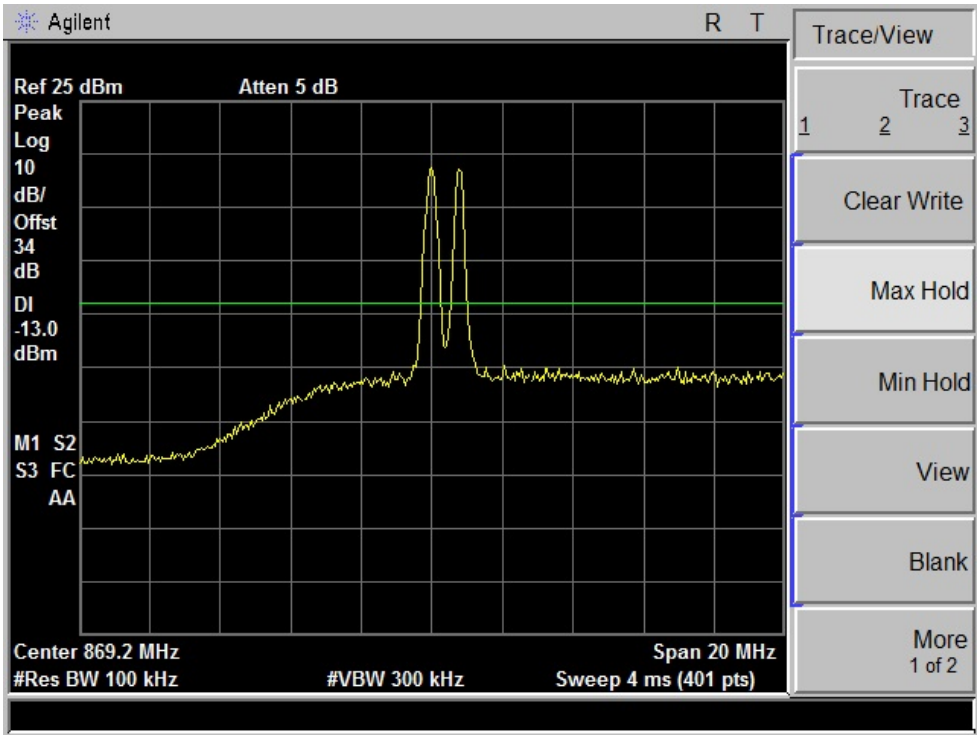
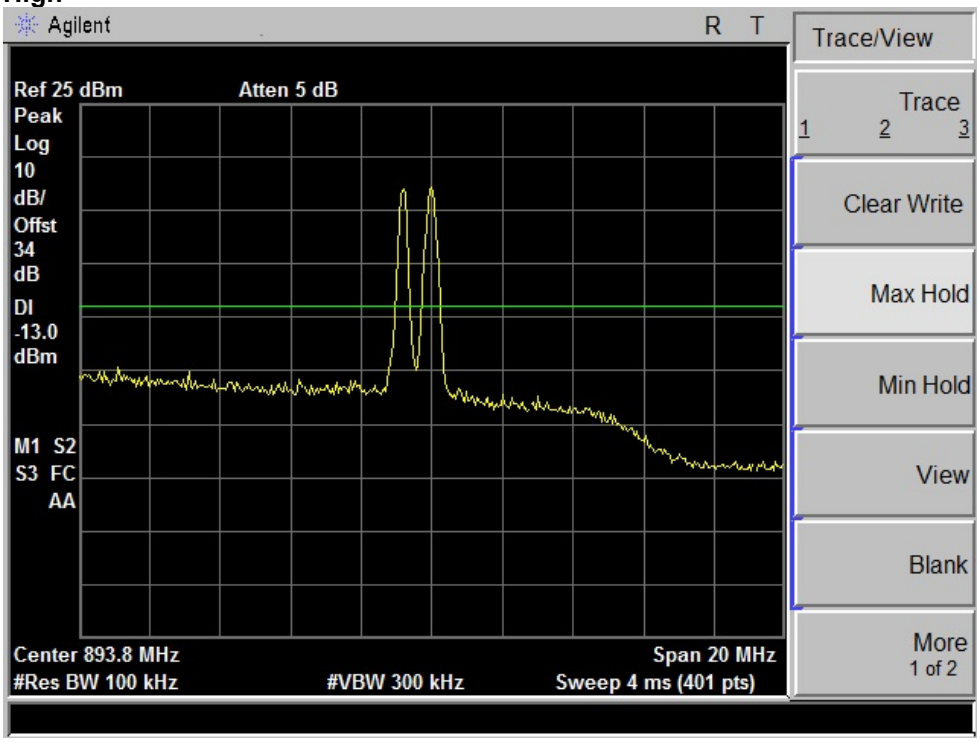


GSM 850 (EDGE)

Low

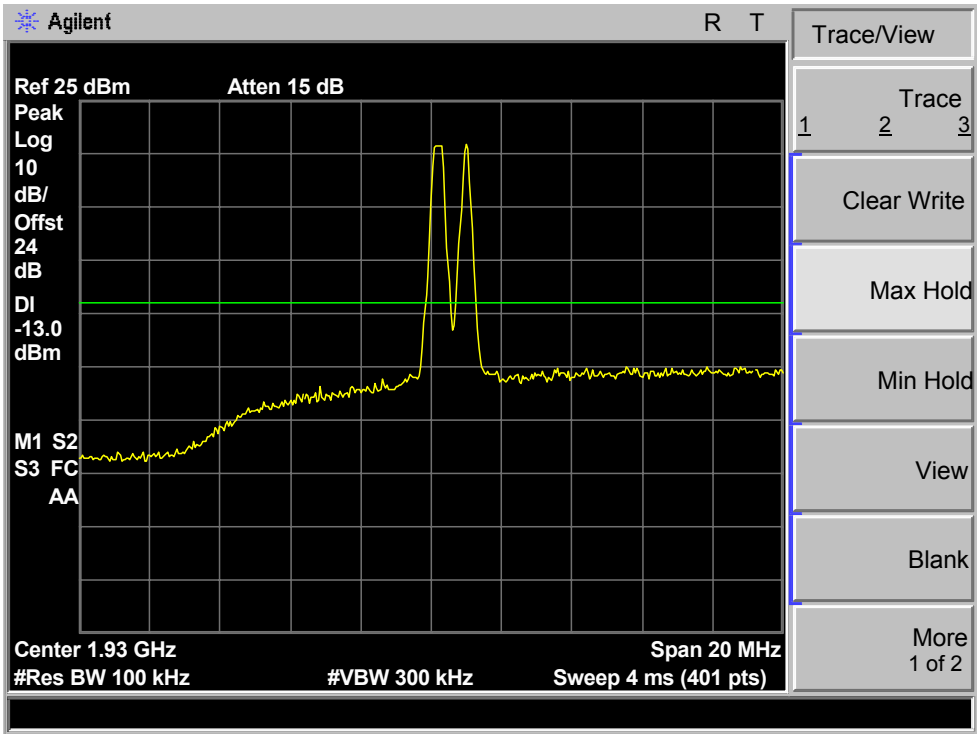


High

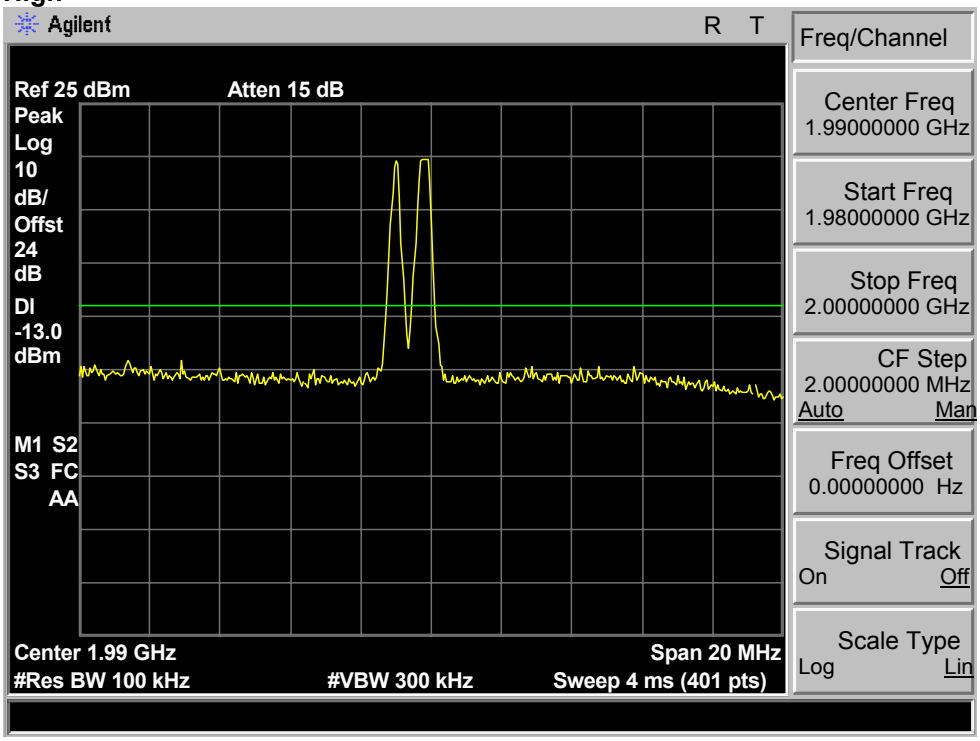


GSM 1900

Low

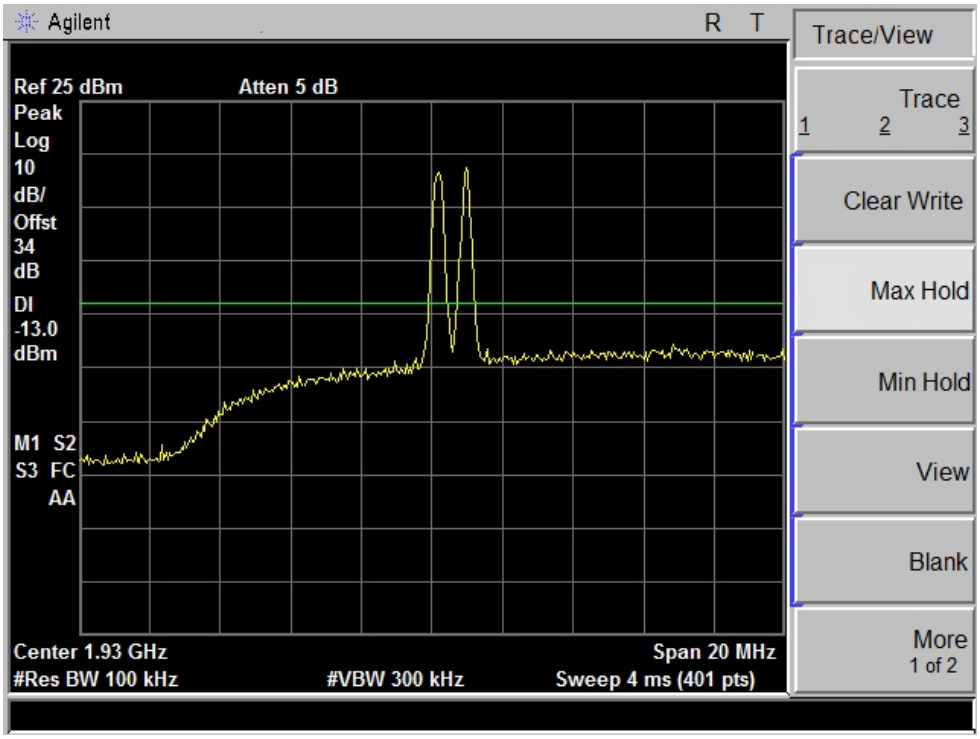


High



GSM 1900 (EDGE)

Low



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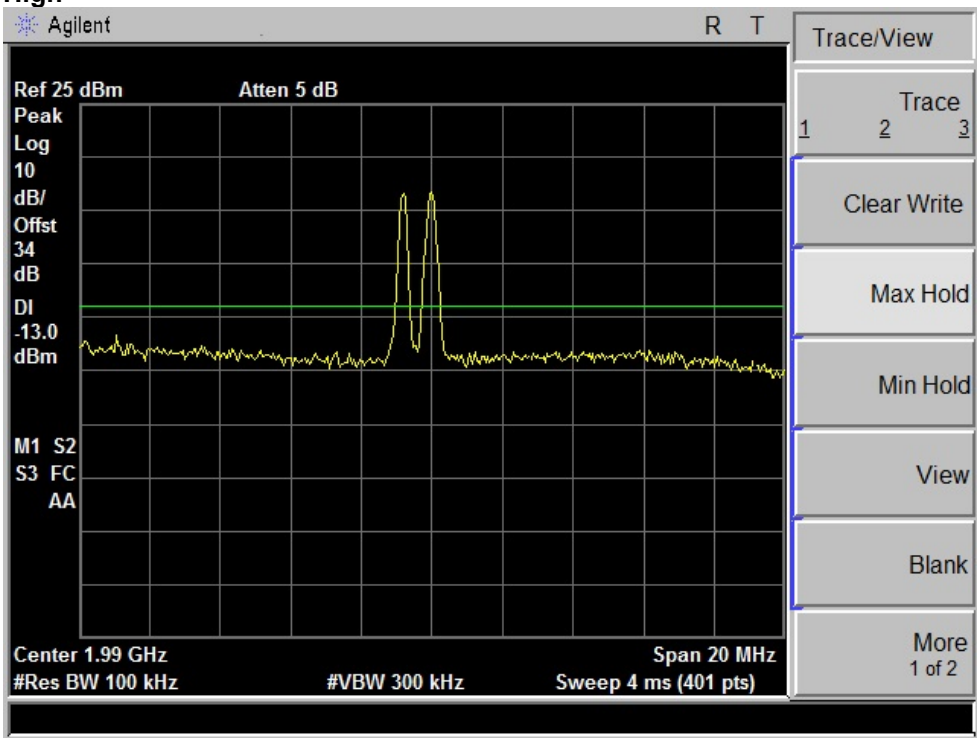
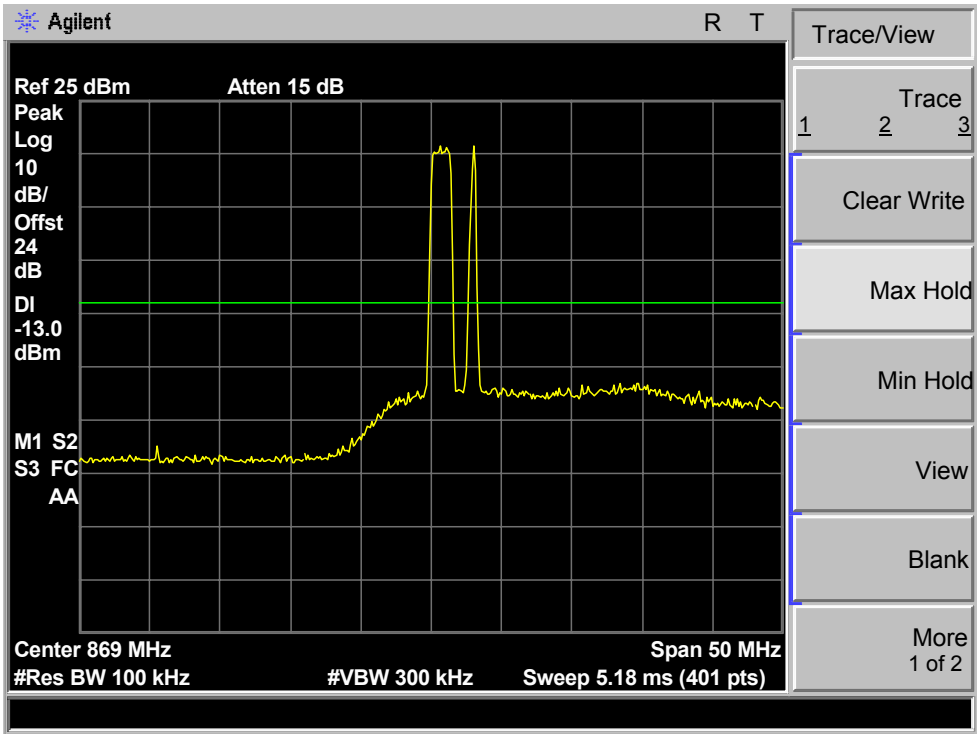
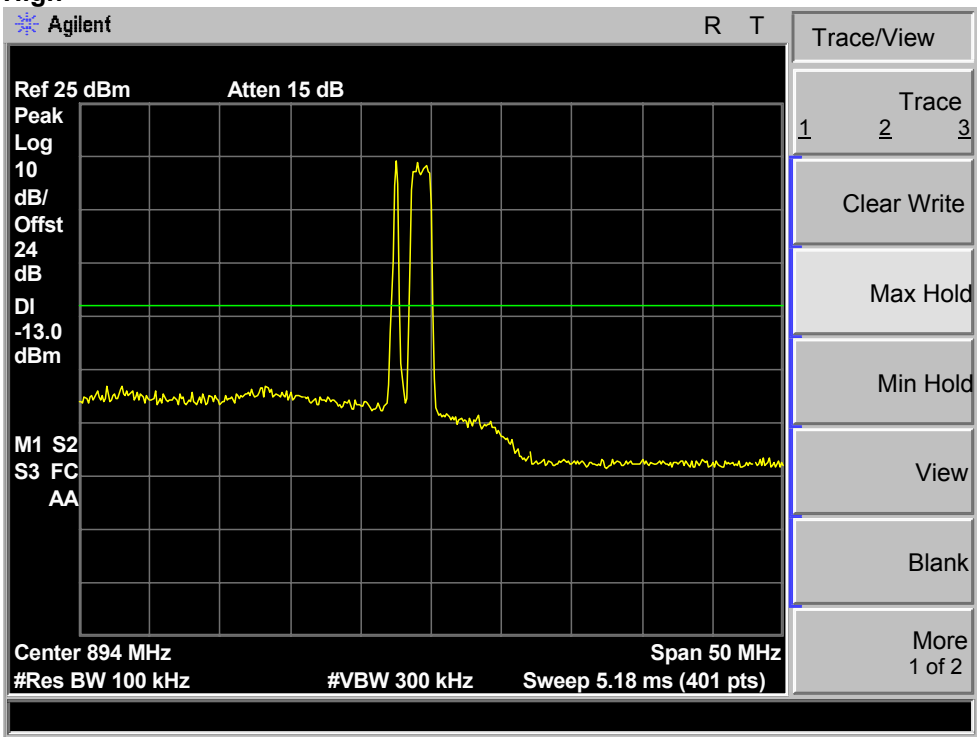


CDMA 850

Low

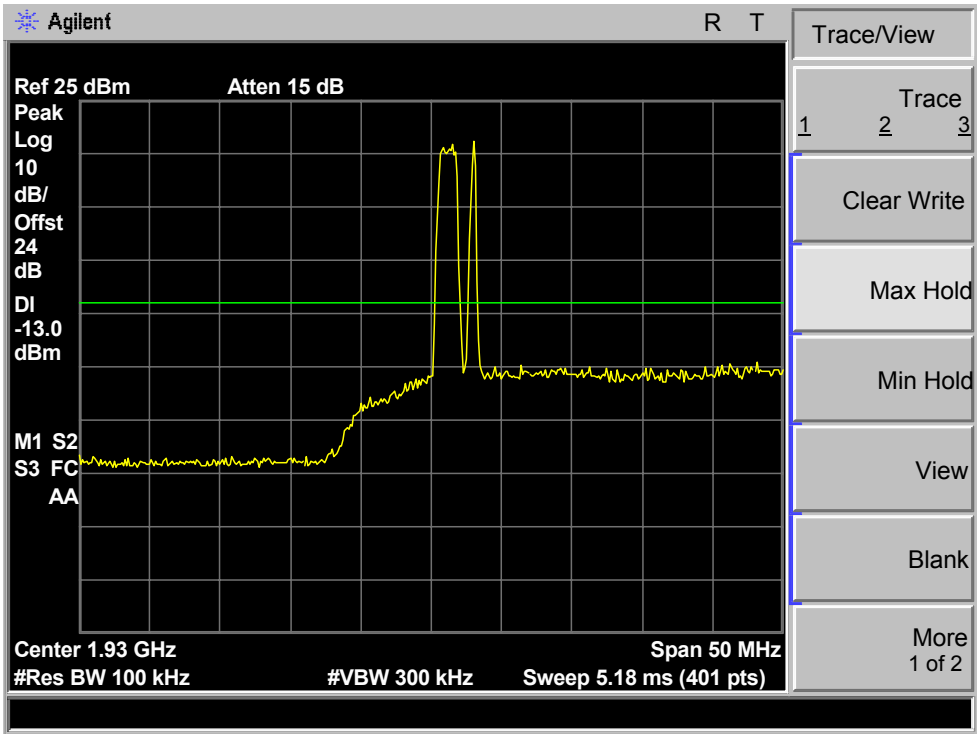


High



CDMA 1900

Low



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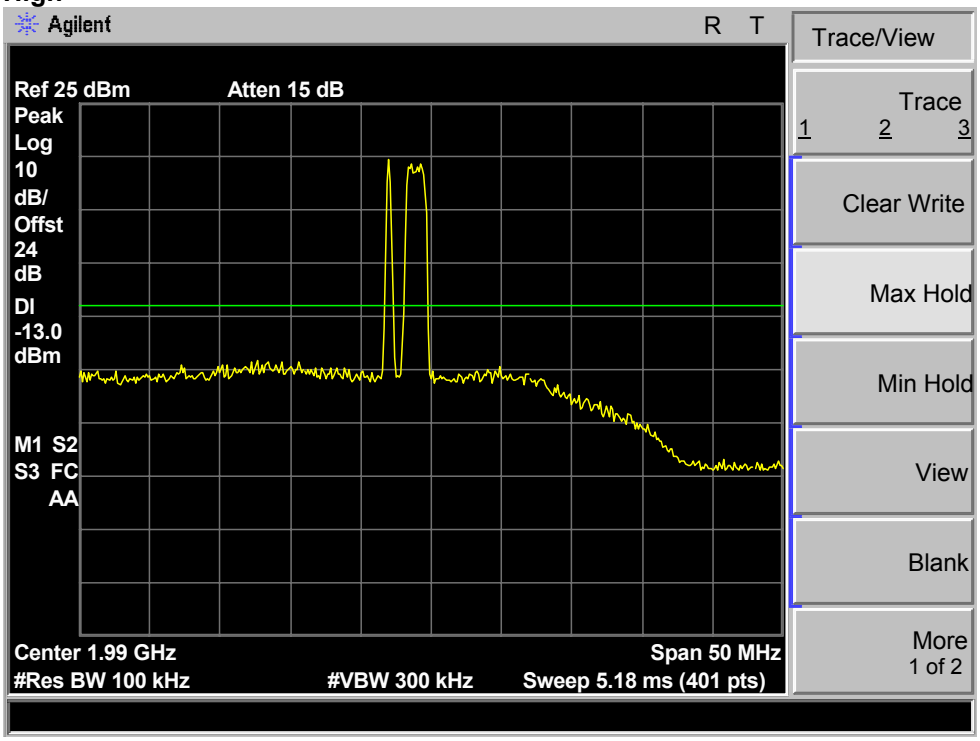
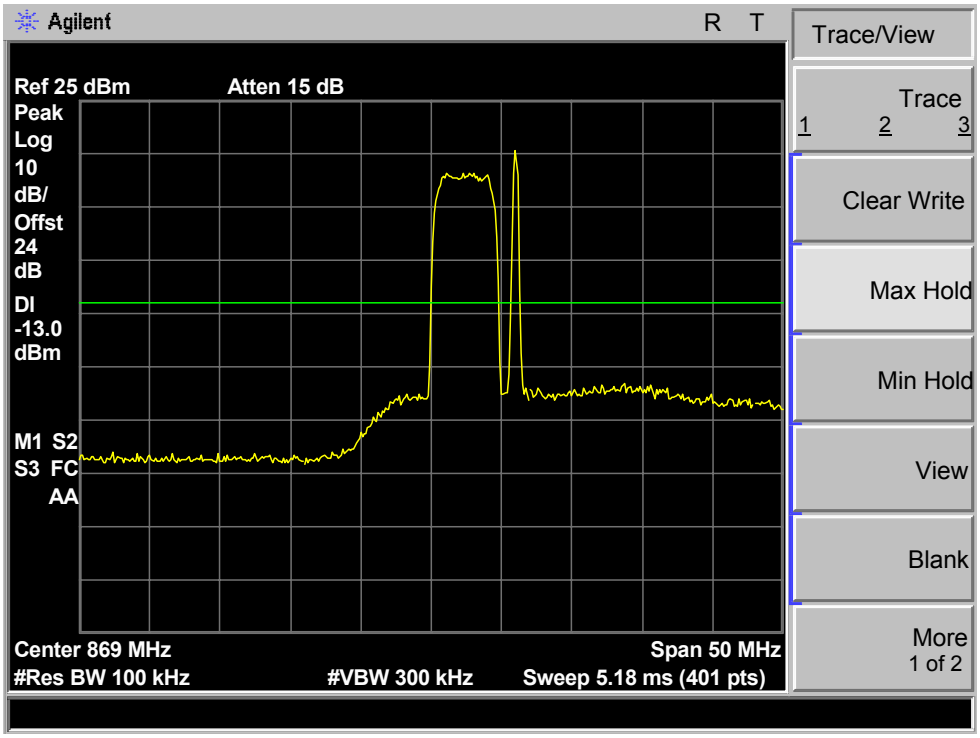


WCDMA 850

Low



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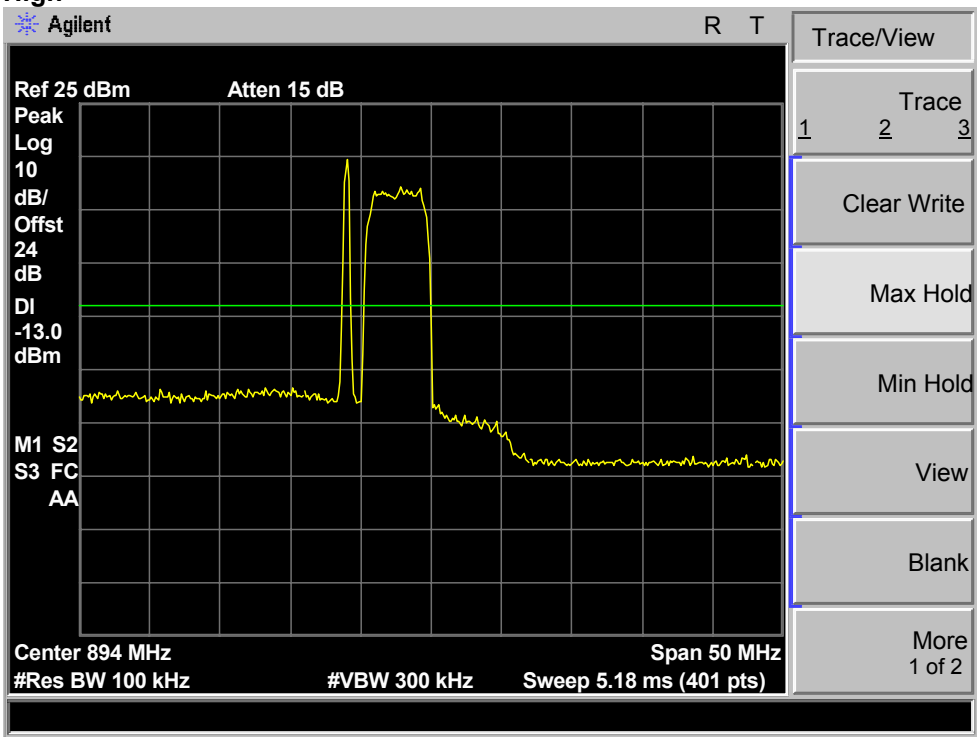
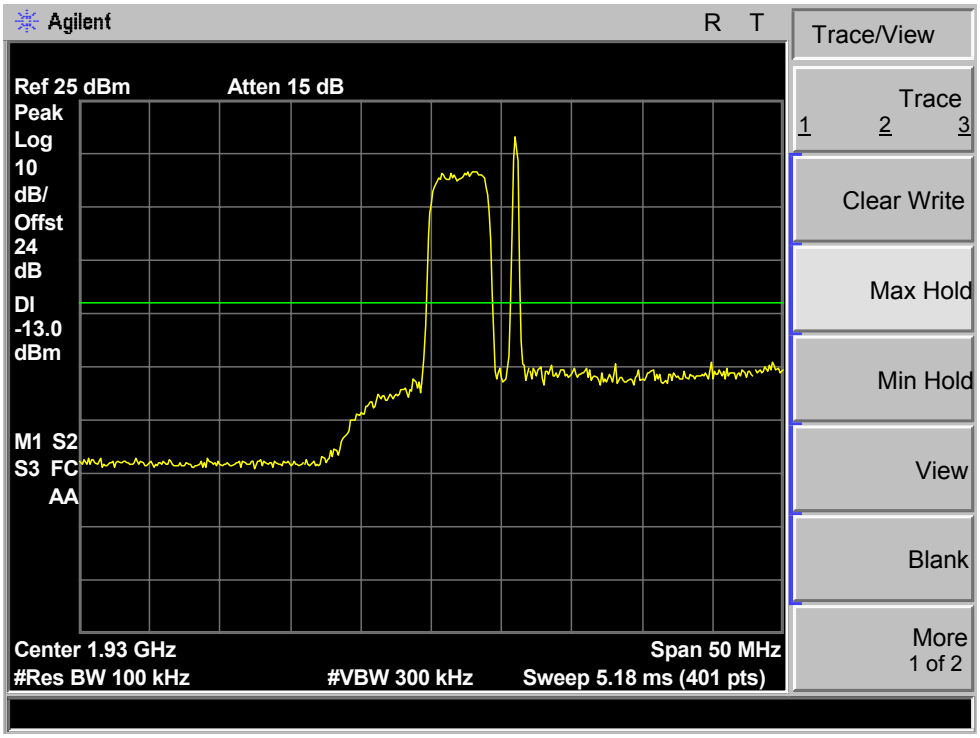
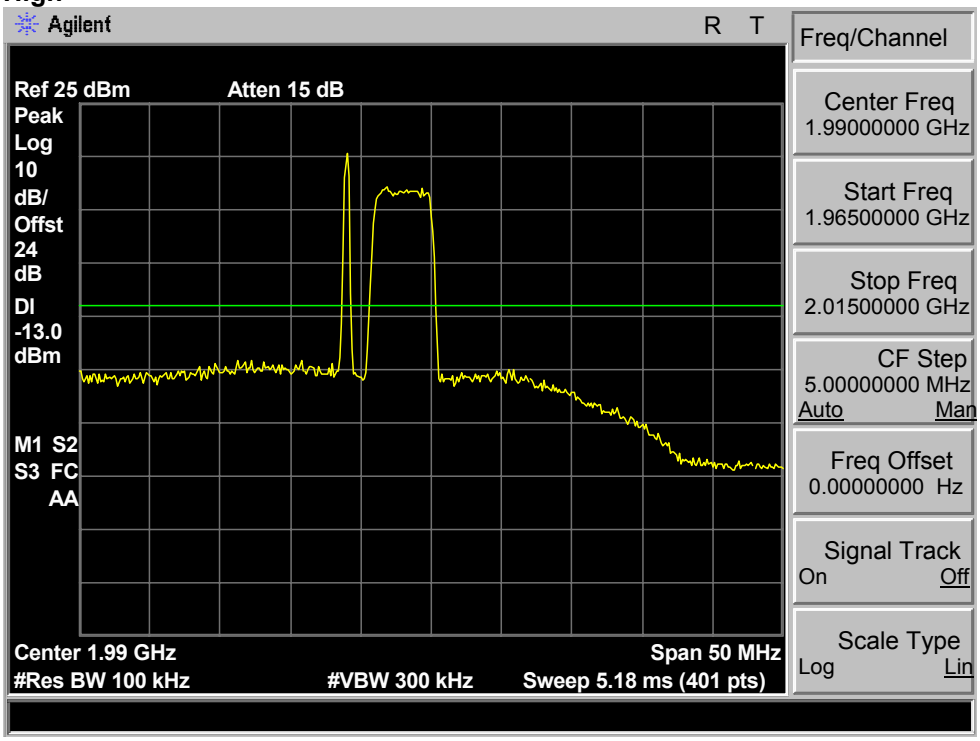


WCDMA 1900

Low



High



3.2.5 Transmitter Spurious Radiation

1) Requirement

The power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least (43 + 10 log P) dB. Note: That corresponds to the level of -13 dBm for any radiated out-of-band and spurious emissions.

2) Test Procedure

The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The frequency range up to 10-th harmonic of each of the three fundamental frequencies (low, middle, and high channels) was investigated. The worst case of emission was reported. For spurious emissions attenuation, the substitution method was used. The EUT was substituted by a reference antenna (half-wave dipole - below 1 GHz, or Horn antenna - above 1GHz), connected to a signal generator. The signal generator output level (Vg in dBm) was adjusted to obtain the same reading as from EUT. The EIRP at the spurious emissions frequency was calculated as follows.

EIRP(dBm)= Vg + G (dBi)
The EUT output port was connected to a 50 Ω termination load.

3) Test Result : complies

* EIRP is calculated as: EIRP(dBm)= Vg(dBm) + G (dBi)
All other emissions not reported are more than 20 dB below the limit.

Transmitter Spurious Radiated Emissions – GSM 850

Frequency [MHz]	SA Reading [dBuV/m]	Signal Generator Output required to have the same SA Reading as from EUT [dBm]	EIRP [dBm]	Limit [dBm]	Margin [dB]
All other emissions not reported are more than 20 dB below the limit.					

Transmitter Spurious Radiated Emissions – GSM 850 (EDGE)

Frequency [MHz]	SA Reading [dBuV/m]	Signal Generator Output required to have the same SA Reading as from EUT [dBm]	EIRP [dBm]	Limit [dBm]	Margin [dB]
All other emissions not reported are more than 20 dB below the limit.					

Transmitter Spurious Radiated Emissions – GSM 1900

Frequency [MHz]	SA Reading [dBuV/m]	Signal Generator Output required to have the same SA Reading as from EUT [dBm]	EIRP [dBm]	Limit [dBm]	Margin [dB]
All other emissions not reported are more than 20 dB below the limit.					

Transmitter Spurious Radiated Emissions – GSM 1900 (EDGE)

Frequency [MHz]	SA Reading [dBuV/m]	Signal Generator Output required to have the same SA Reading as from EUT [dBm]	EIRP [dBm]	Limit [dBm]	Margin [dB]
All other emissions not reported are more than 20 dB below the limit.					

Transmitter Spurious Radiated Emissions – CDMA 850

Frequency [MHz]	SA Reading [dBuV/m]	Signal Generator Output required to have the same SA Reading as from EUT [dBm]	EIRP [dBm]	Limit [dBm]	Margin [dB]
All other emissions not reported are more than 20 dB below the limit.					

Transmitter Spurious Radiated Emissions – CDMA 1900

Frequency [MHz]	SA Reading [dBuV/m]	Signal Generator Output required to have the same SA Reading as from EUT [dBm]	EIRP [dBm]	Limit [dBm]	Margin [dB]
All other emissions not reported are more than 20 dB below the limit.					

Transmitter Spurious Radiated Emissions – WCDMA 850

Frequency [MHz]	SA Reading [dBuV/m]	Signal Generator Output required to have the same SA Reading as from EUT [dBm]	EIRP [dBm]	Limit [dBm]	Margin [dB]
All other emissions not reported are more than 20 dB below the limit.					

Transmitter Spurious Radiated Emissions – WCDMA 1900

Frequency [MHz]	SA Reading [dBuV/m]	Signal Generator Output required to have the same SA Reading as from EUT [dBm]	EIRP [dBm]	Limit [dBm]	Margin [dB]
All other emissions not reported are more than 20 dB below the limit.					

3.2.5 Frequency Stability

1) Requirement

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

2) Test Procedure

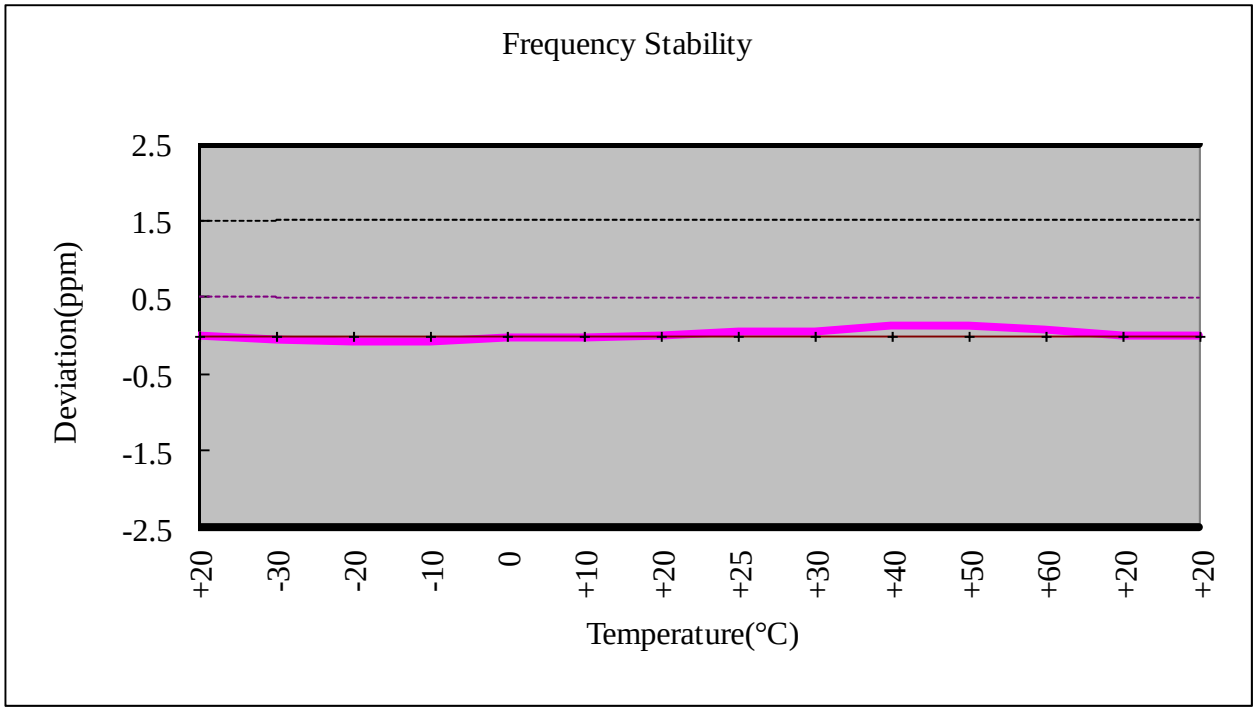
The EUT was placed inside the temperature chamber. The RF output port was connected to a spectrum analyzer. The EUT was setup to transmit the maximum power. After the temperature stabilized for approximately 20 minutes, the transmitting frequency was measured by the spectrum analyzer and recorded. At room temperature, the frequency was measured when the EUT was powered with the nominal voltage and with 85% and 115% of the nominal voltage.

3) Test Result : complies

Refer to the next page**.**

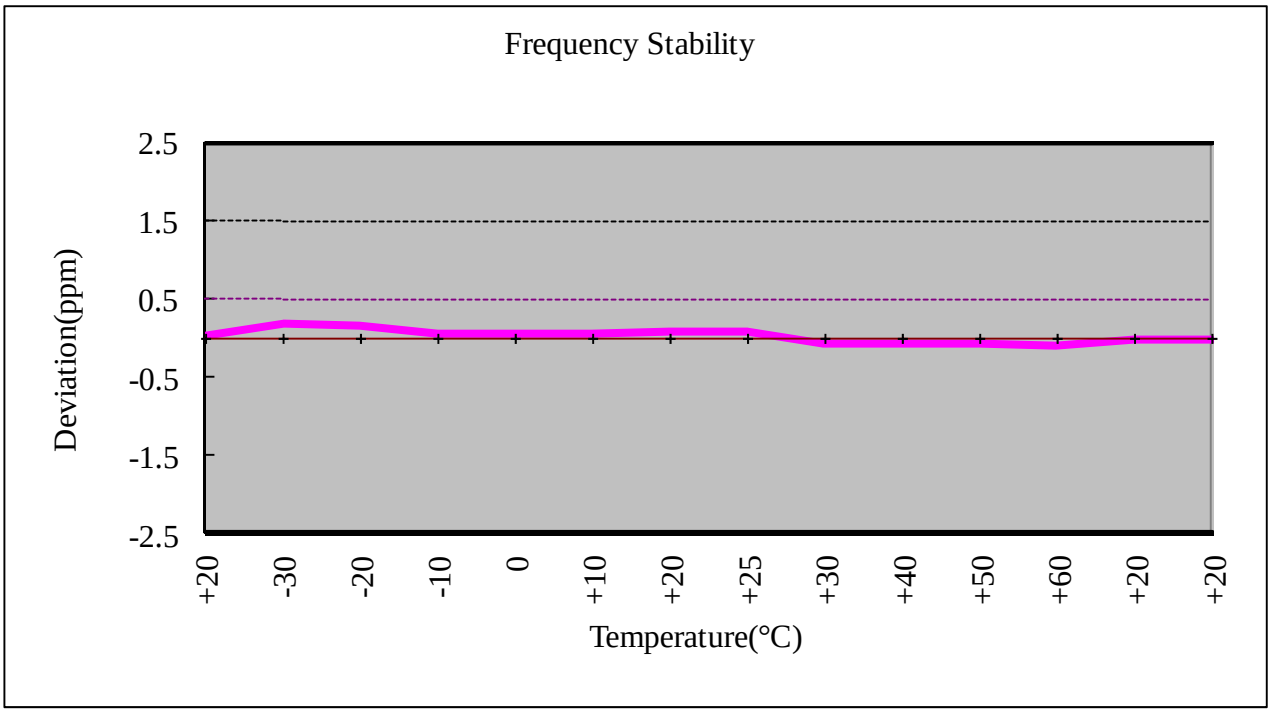
OPERATING FREQUENCY : 881,520,072 Hz
CHANNEL : 384(Mid)
REFERENCE VOLTAGE : 9 VDC
DEVIATION LIMIT : ± 0.00010 % or 1 ppm

VOLTAGE (%)	**POWER** (VDC)	TEMP (dB)	**FREQ** (Hz)	**Deviation** (%)
100%	9	+20(Ref)	881,520,072	0.000000
100%		-30	881,520,029	-0.000005
100%		-20	881,520,018	-0.000006
100%		-10	881,520,010	-0.000007
100%		0	881,520,043	-0.000003
100%		+10	881,520,063	-0.000001
100%		+20	881,520,072	0.000000
100%		+25	881,520,115	0.000005
100%		+30	881,520,118	0.000005
100%		+40	881,520,184	0.000013
100%		+50	881,520,197	0.000014
100%		+60	881,520,155	0.000009
85%	7.65	+20	881,520,086	0.000002
115%	10.35	+20	881,520,082	0.000001



OPERATING FREQUENCY : 1,960,000,917 Hz
CHANNEL : 661(Mid)
REFERENCE VOLTAGE : 9 VDC
DEVIATION LIMIT : ± 0.00010 % or 1 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (dB)	FREQ (Hz)	Deviation (%)
100%	9	+20(Ref)	1,960,000,917	0.000002
100%		-30	1,960,001,314	0.000018
100%		-20	1,960,001,268	0.000016
100%		-10	1,960,001,075	0.000006
100%		0	1,960,001,094	0.000007
100%		+10	1,960,001,083	0.000006
100%		+20	1,960,001,112	0.000008
100%		+25	1,960,001,098	0.000007
100%		+30	1,960,000,843	-0.000006
100%		+40	1,960,000,813	-0.000008
100%		+50	1,960,000,822	-0.000007
100%		+60	1,960,000,786	-0.000009
85%	7.65	+20	1,960,000,937	-0.000001
115%	10.35	+20	1,960,000,920	-0.000002



3.3 CONCLUSION

The data collected shows that Intelibs, Inc. **Dual Band SRU FCC ID: Z69D01T4JX2** complies with all the requirements of Parts 2, 22, 24 of the FCC Rules.

Appendix A Test Equipment Used for test

	Description	Model No.	Serial No.	Manufacturer	Interval	Last Cal. Date
1	Spectrum Analyzer	E4407B	US39010161	Agilent	1 year	2013-03-29
2	Spectrum Analyzer	R3273	121000578	Advantest	1 year	2013-05-14
3	Signal Generator	E4438C	MY44270255	Agilent	1 year	2013-03-29
4	Signal Generator	E4438C	MY45094263	Agilent	1 year	2013-05-10
5	CDMA Mobile Station test set	E8285A	US39220991	Agilent	1 year	2013-03-29
6	Synthesized Sweeper	83752A	3610AA01480	Agilent	1 year	2013-03-29
7	Attenuator	8494B	MY41110957	Agilent	1 year	2013-03-29
8	Attenuator	8496B	US00340476	Agilent	1 year	2013-03-29
9	Horn Antenna	3115	102292	ETS-Lindgren	2 year	2012-04-10
10	RF Amplifier	TS-PA2	1020007	TESTEK	1 year	2012-10-07
11	RF Amplifier	8447D	2944A10704	HP	1 year	2012-10-07
12	Test Receiver	ESVD	836108/010	R&S	1 year	2013-03-14
13	Test Receiver	ESCS30	834115/019	R&S	1 year	2013-07-05
14	Log Periodic Antenna	VULP 9168	9168-485	Schwarz Beck	2 year	2012-05-10
15	Power Divider	11636B	54379	Agilent	1 year	2013-03-29
16	Dual Directional Coupler	11682D	1212A02230	HP	1 year	2013-03-29
17	Dual Directional Coupler	778D-012	15738	HP	1 year	2013-03-29
18	DC Power Supply	E3632A	KR75305602	HP	1 year	2013-03-29
19	Power Meter	E4416A	GB41050492	Agilent	1 year	2013-03-29
20	Power Sensor	E9327A	US40441493	Agilent	1 year	2013-03-29
21	Function Generator	33250A	US40000357	Agilent	1 year	2013-03-29
22	Modulation Analyzer	8901B	3438A05222	Agilent	1 year	2013-03-29
23	Audio Analyzer	3903B	3514A15367	Agilent	1 year	2013-03-29
24	Frequency Counter	5315B	3049A01558	HP	1 year	2013-03-29
25	Terminator	2001-6005-00	None	OMNISPECTRA	1 year	2013-03-29
26	TEMP & HUMIDITY Chamber	EN-VT-150	EN-090402	ENEX Scientific	1 year	2013-03-29